

SEPTEMBER

1953

Route this to:

for men who manage

CHEMICAL PROCESSING

Highlights

of This Issue

Fast reaction and high conversion will yield low-cost $60^\circ \text{Be}^* \text{H}_2\text{SO}_4$ 10

Chemical uses for ozone continue to develop30

Tennessee Eastman's bulk handling of cellulose acetate . .50

Norwich Pharmacal produces 20 per cent more tablets on rotary press108

Easy-to-handle maleic anhydride pellets produced at rate of 600 lb/hr138

Chlorine gas and molten aluminum resisted by ceramic coating148

Serious in-plant odor problem ended by catalytic oxidation of fumes174

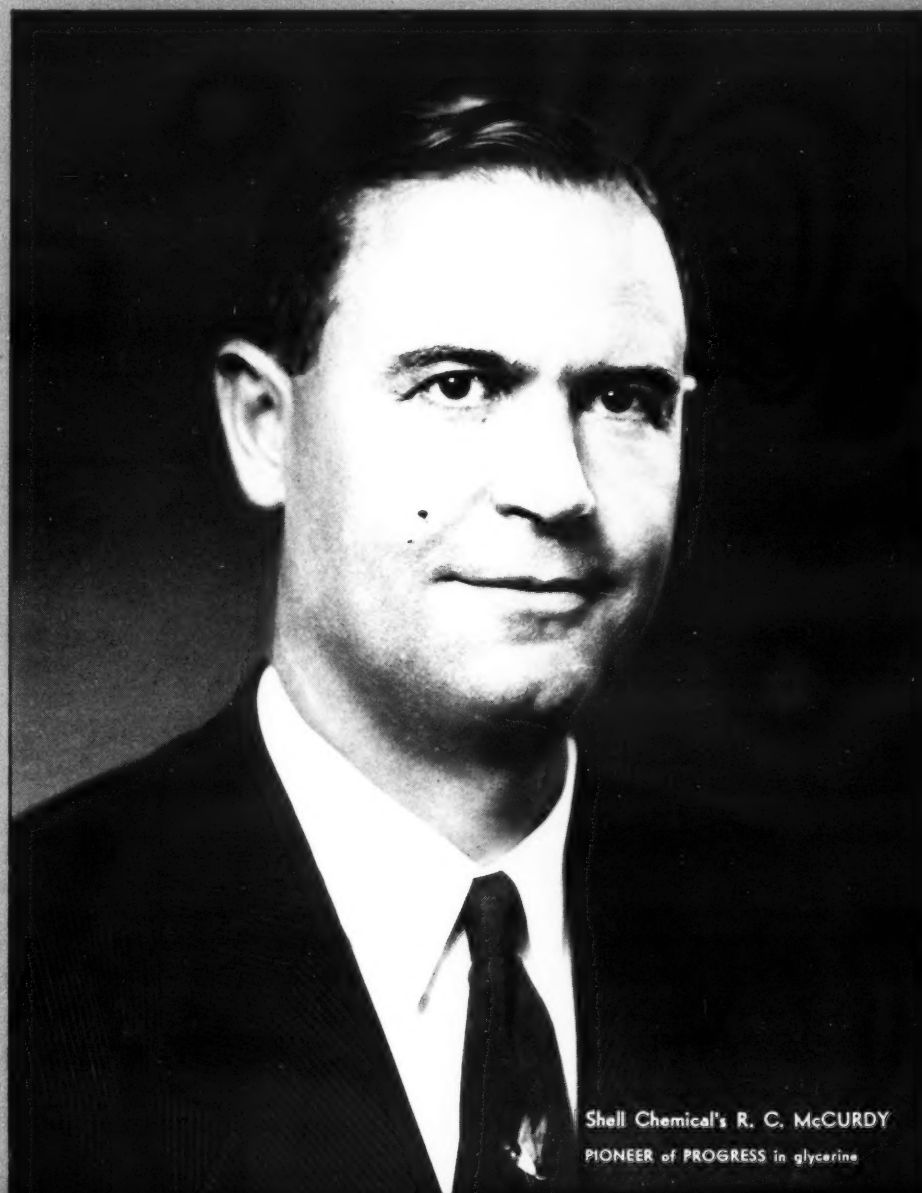
(Continued on page 4)

The Cover Picture

President R. C. McCurdy of The Shell Chemical Company — first group to synthesize glycerine commercially from petroleum . . . and builders of a new plant. . . See page 6

PUTMAN PUBLISHING CO., CHICAGO

Creators of PUTMAN-STYLE Magazines . . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION

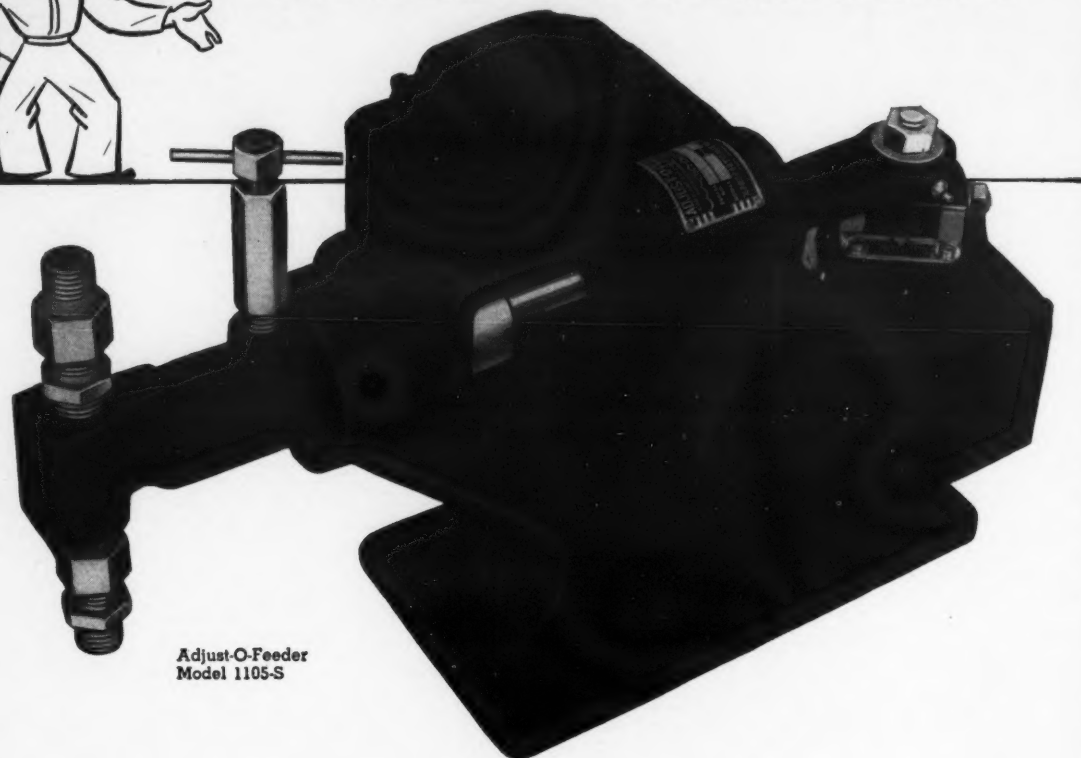


Shell Chemical's R. C. McCURDY
PIONEER of PROGRESS in glycerine



NEW PROPORTIONING PUMP PACKAGE

FOR ADDITIVES OR CHEMICAL REAGENTS



Adjust-O-Feeder
Model 1105-S

- **LOW COST**
- **COMPACT**
Built-in standard motor — no separate gearbox or couplings.
Built-in oil-enclosed gear reducer.
- **MICRO-STROKE ADJUSTMENT**
Scale easily read — crank and connecting rod operate in horizontal plane.
- **LONG LIFE AND EASY MAINTENANCE**
One-piece Meehanite iron frame for positive alignment of all moving parts.
Double check valves on suction and discharge easily removable.

This new, compact proportioning pump, by %Proportioneers, Inc.%, is inexpensive and meets most requirements for a low capacity, medium pressure chemical feed pump. The standard Model 1105-S has a capacity range from 1 to 10 GPH and will discharge against pressures up to 650 psig. For lower feeds, the unit is available with a range of from 0.5 to 5 GPH. Complete and self-contained, Model 1105-S weighs less than 100 lbs. and is ready to operate.

Ask for Bulletin 1105

Write to %PROPORTIONEERS, INC.%, 387 Harris Ave., Providence 1, R. I.

Technical service representatives in principal cities of the United States, Canada, Mexico and other foreign countries.



"That's Interesting"

Role of X-ray diffraction in crime detection

"The Case of the Bolted Door" is a reprint available from North American Philips Co., Inc., 750 S. Fulton Ave., Mount Vernon, N.Y., which describes a real case where X-ray diffraction



Used to be, I just hadda watch for a cop on his beat.

furnished basic evidence in a robbery case. The folder shows photos of a grease-stained leather jacket worn by the robber, as well as the X-ray diffraction films which were used to prove that the grease came from a kitchen exhaust fan, through which opening the robber crawled to gain entry.

Welding plastics

A plastic welding training course is being offered by American Agile Corp., Bedford, Ohio, for anyone interested in the structural fabrication of thermoplastic materials (polyethylene & unplasticized polyvinyl chloride). The course includes lectures, design, theory, welding exercises, advanced course and design of welding construction, reinforcements, and related topics.

Aluminum roofs rolled on

Roliton is a recently developed roofing material that is applied in strips from a portable pan and batten forming machine. By forming the strips of aluminum roofing right on the job, the home owner gets a custom-made fit without the expense of shop work. (Kaiser Aluminum News)

For more information on product at left, specify CP 3234 see information request blank between pages 2-3.



(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 16 September, 1953 No. 9

Russell L. Putman *President and Publisher*
 Ewing W. Graham *Vice President and General Manager*
 Nathaniel Beck *Vice President and Sales Manager*
 Kenneth S. Kaull *Vice President*
 Harris N. Pickett *Vice President*
 Carroll H. Thomas *Vice President*
 George W. N. Riddle *Director of Development*
 Daniel J. Hansen *Circulation Manager*
 W. E. Rennolds *Office and Personnel Manager*
 Raymond C. Clifford *Production Manager*

Advertising Representatives

CHICAGO 11, 111 East Delaware Place, Whitehall 4-6141, C. H. Thomas, Vice Pres.; Charles H. Oestmann, Richard H. Putman
 ATLANTA 369 Lexington Ave., New York 17, N. Y., Murray Hill 6-7738, Edward M. Buck
 CLEVELAND 6, 10006 Carnegie Avenue, Sweetbriar 1-8138, Harris N. Pickett, Vice Pres., H. F. Smurthwaite
 DALLAS 369 Lexington Ave., New York 17, N. Y., Murray Hill 6-7738, Edward M. Buck
 DETROIT 35, 18482 Coyle Ave., Vermont 6-3244, Frank E. Landry
 LOS ANGELES 53, Granada Building, 672 So. Lafayette Park Place, Dunkirk 8-2286, Bob Wettstein
 NEW YORK 17, 369 Lexington Avenue, Murray Hill 6-7738, Kenneth S. Kaull, Vice Pres.; Charles J. Stillman, Jr., John C. Jones, Robert F. Lewis, Norman A. Schuele, Jr., Henry C. Ruppel, Edward M. Buck
 PORTLAND 5, 1220 S.W. Stark Street, ATwater 4107, (Bob Wettstein)
 ROCHESTER 20, 1145 Monroe Avenue, Monroe 0766 W, James W. Connell
 ST. LOUIS 13 St. Margaret Ct., Florissant, Mo., Terryhill 7-3137, Donald F. Maguire
 SAN FRANCISCO 8, Howard Bldg., 209 Post Street, YUkon 6-2522 (Bob Wettstein) Jerry Nowell, Edward Spasek.

Over 35,000 Circulation in Chemical Process plants

Chemical & Allied Products	Food Products	Public Utilities, Consultants, Govt.
Coke Oven Products	Leather Tanning	Rubber Products
Composition Materials, Fiber, etc	Lime & Cement	Soap and Cleaning Compounds
Distilleries and Breweries	Metallurgical, etc	Stone, Clay & Glass Products
Drugs, Cosmetics & Pharmaceuticals	Paint & Varnish	... and allied Lines (Carbon Glue, Oils, etc)
Fertilizers	Paper and Pulp	
	Petroleum Refining and Products	
	Plastic, Cellulose, Rayon, etc	

Subscriptions

QUALIFIED-READER SUBSCRIPTION are accepted from selected management and technical key-men in the chemical industries without charge. To apply for a qualified-reader subscription see request-qualification form opposite inside front cover.

Published Monthly by

PUTMAN PUBLISHING COMPANY

111 East Delaware Place, Chicago 11, Illinois
 Whitehall 4-6141

Copyright 1953 by Putman Publishing Company

Member
 National Business Publications, Inc.
 Controlled Circulation Audit, Inc. CCA

MADE BY SPECIALISTS in Stainless Steels, Monel, Nickel

The FLOWLINE Elbow

FLOWLINE Fittings are made by specialists having more experience with corrosion-resistant piping than any other fitting manufacturer. Our exclusive process of cold forming and annealing produces fittings in the best condition for corrosion service. The use of FLOWLINE Fittings makes available to users of corrosion-resistant piping the efficiency and economy of simplified welded construction. The FLOWLINE Ell is typical. Its long radius and smooth interior walls assure full effective sweep, reduce pressure loss, minimize flow resistance, corrosion, erosion, and product accumulation. The ell is round and ends are accurately machine tool cut and finished, making it easy to fit to pipe.

FLOWLINE Welding Fittings—tees, ells, reducers, stub ends, and caps—are made and normally stocked in Schedules 5, 10, 40, and 80—sizes 1/2" through 12"—in stainless types 304, 316, 347; Monel, Nickel. All fittings are annealed, cleaned bright—and stainless fittings are passivated—and marked with type of metal, heat number, size, schedule, and wall thickness.

WELDING FITTINGS CORP.
 NEW CASTLE, PENNSYLVANIA
 World's Largest Manufacturer of Stainless Welding Fittings

When inquiring check CP 3235 on handy form, pgs. 2-3

In this Issue

Instrument shows — two varieties



The kids are headed back to school, most of us have had our vacations, and, in short, it's fall again. One of the very important things that happens every fall is the Instrument Show . . . this year to be held in Chicago from September 21 to 25.

In a way, there's a small instrument show in each issue of CHEMICAL PROCESSING — new instrument ideas which we report each month. This month, for example, there's a story about how a calculating machine (computer, if you like) can be tied in with industrial scales for inventory control, automatic batching, etc. Another example in this issue is the system of instrumentation described on page 92 where radioactivity is used in measuring density, level, thickness, and related quantities.

And, of course, during the past year we also reported on how new instrument ideas are being put to work all over the country. In Washington we learned of a story in New England. In New England, while getting the first story, we heard about another in Ohio, and so forth. These have appeared or will appear in CP shortly.

But the Chicago show this year will have lots of unreported new developments. It's bound to — there will be 197 exhibitors displaying their developments in 34,608 square feet of floor space.

Success of past instrument shows can be gaged from the fact that they've grown from 92 exhibitors in 1946 to 197 this year.

But whether you choose the annual instrument show or the monthly "show" in CHEMICAL PROCESSING (and we hope you see both) you can be sure that there will be lots of new and important developments in instruments coming your way.

Bruce Fader
ASSISTANT EDITOR

editorial highlights

Semi-continuous manufacture raises production rate of Shell's lithium hydroxystearate grease	8
Vinyl coatings not lifted by subsequent top coats	22
Reciprocal bagging operation allows hopper-scale team to package and weigh 1200 lb/min	58
HCl obtained as co-product of trichlorethylene process	75
Adding machine added to scale speeds operations, loading, invoicing in plant	89
Twenty tons of product per hour are turned out by bulk packer	109
Smaller heat exchanger model costs less than standard	142
Stainless steel alloy announced with non-seizing properties in corrosive service	154
Foam system protecting tanks utilizes a variable-orifice foam maker	162
Saves space, provides accurate and efficient support for hi-temp piping systems	185

editorial sections

That's Interesting	2	Expanding Chemical Production	146
New Solutions of Processing Problems	8	Corrosion Control	148
Materials	22	Briefs	160
Material Handling	50	Safety	162
Ideas	68	Construction and Maintenance	174
Instrumentation & Control	88	New Literature	220
Packaging	108	Processing and Engineering Data	222
For the Laboratory	118	Convention & Exhibit Schedule	245
Recent Books	136	Advertisers in This Issue	250
Processing Equipment	138		

editorial staff

Editor

John C. Vaaler

Associate Editors

Dana B. Berg

M. Bruce Smith

Assistant Editors

Bruce Fader

Walter J. Banke

Karl Beliakoff

Gary R. Smith

Gordon Weyermuller

C. Richard Mann

Roy G. Helsing

Editorial Assistants

Helen Hennings

Caroline Serewicz

Anna Mae Burke

Art Editor

H. W. Lichtenberger

special services for readers

1. When you want more information on processes, controls or developments of products discussed in this issue, see Reader Service slip opposite page 2

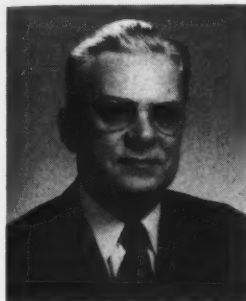
2. If you are looking for information on specific products, use the Product Directory "Quicklocator" for all types of materials, instruments, processing equipment, etc. This Product Directory lists everything in this issue, with page references 246

3. If you want to subscribe to this magazine, see reader-qualification form opposite page . . . 3

The Aim and Application of Procurement Standards

This editorial has been written at the request of the editors of CHEMICAL PROCESSING . . . and is authored by

MR. J. G. HENDERSON, Dept. of Construction and Design, Carbide and Carbon Chemicals Co., Div. of Union Carbide & Carbon Corp.



the Chemical Industry Advisory Board of the American Standards Association.

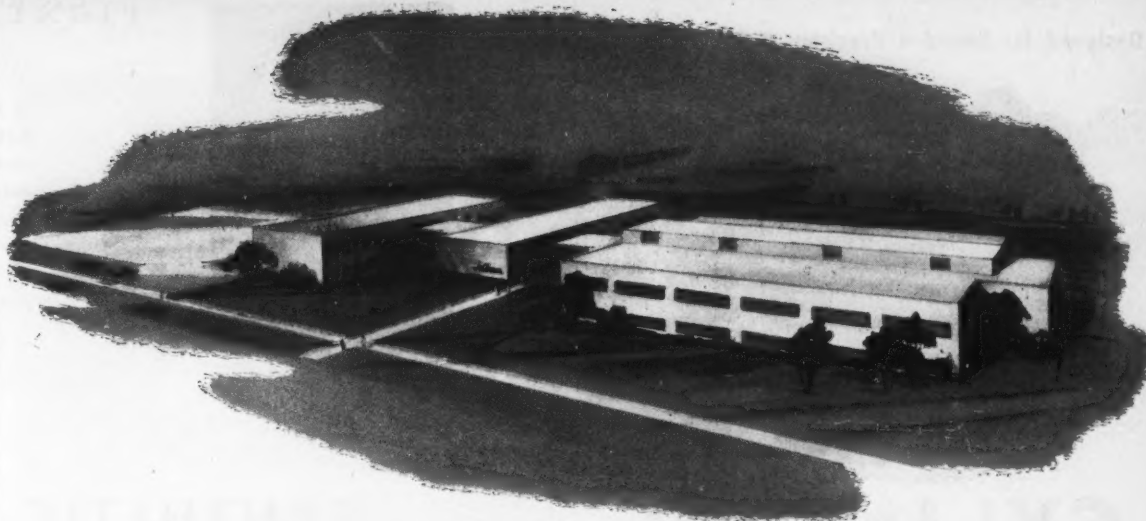
Mr. Henderson has served as Staff Engineer and Head of Standards Section of the Department of Construction and Design, Carbide and Carbon Chemicals Co., for the past 20 years. He is a past president of the Charleston Chapter and member of the Executive Committee of the West Virginia Society of Professional Engineers. Presently, he is Chairman of

THE ASA Chemical Industry Advisory Board came into being in May of 1950, the result of a vigorous appeal to the chemical industry through one of the industry's most effective representatives — The Manufacturing Chemists' Association. Engineers who had been faced with the mounting difficulties of materials and equipment procurement were now most conscious of a steadily deteriorating condition in the materials supply market. They began to recognize the need for adjusting the material and commodity demands of separate chemical companies to some rational basis, whereby there could develop the same important advantages of standardization common to other industries.

As a means to alleviate these difficulties in procurement, the CIAB was organized by the American Standards Association and its scope was limited only by the accepted procedures of that body. The Board's present work program calls for standardizing the dimensions of stainless, copper, aluminum, and nickel alloy pipe and fittings. It is preparing a new standard analysis of stainless steel and has completed the fundamental work for codification of pressure piping. The Board has reviewed a number of additional standardization problems and welcomes all suggestions regarding possible projects for inclusion in its work program.

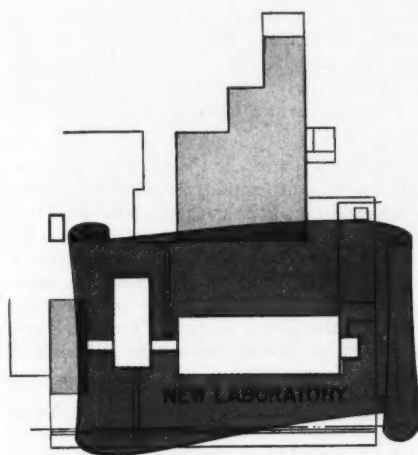
In its effort to develop acceptable standards, the CIAB is often confronted with the criticism that standards do not completely and specifically do a particular job. In part, but only in small part, this criticism is valid. However, it should be remembered that a standard must encompass sufficient breadth to permit its useful application and at the same time provide sufficient detail so as not to reduce its value. The mere existence of a standard does not mean that it must be used. As a tool, the potential user must determine its adaptability to a particular job and, if found suitable, the user may

(Continued on page 231)



RESEARCH PROGRESS

...by Jefferson for the industry



Modern in every respect, and five times larger than original space, Jefferson's new laboratory facilities at Austin, Texas, have been completed.

Here, in addition to research on new products for industry, new production techniques, and new uses for current products—Jefferson has special facilities available for making *your* new products on a custom basis for your market and sales development.

The enlarged Austin research center—plus new pilot plant facilities—enables Jefferson's research service to keep ahead of the company's continuing growth in the petrochemical industry as producers of *essential chemicals from hydrocarbon sources*.

Ethylene Oxide
Ethylene Glycol
Ethylene Dichloride
Diethylene Glycol
Monoethanolamine
Diethanolamine
Triethanolamine
Nonyl Phenol
Morpholine
Ethylene Carbonate
Propylene Carbonate
Diethylethanolamine
Hydroxyethyl Morpholine

Jefferson
CHEMICAL COMPANY, INC.



260 MADISON AVENUE, NEW YORK 16, N. Y.

Branch Sales Offices: 180 West Washington St., Chicago 2, Ill.; 318 Melrose Building, Houston 2, Texas
Sales Agent: Nelson A. Howard, Jr., 900 Wilshire Boulevard, Los Angeles 17, California
Warehouse Stores: Tenafly, New Jersey; Chicago, Illinois; Houston, Texas

When inquiring check CP 3236 on handy form, pgs. 2-3

Designed for Speed • Precision • Compactness



The AIR CYLINDER

with the Built-in Valve

Air engineers agree: the closer the valve to the cylinder, the more efficient is air cylinder operation. In the Bellows Air Motor the valve, and all operating controls, are an integral part of the cylinder itself.

This built-in construction means quicker action, more positive response, surer control, and more economical operation. Built-in construction means compactness, simplified installation, minimum maintenance.

The Bellows Air Motor is made in five bore sizes: 1 1/4", 1 3/4", 2 1/2", 3 3/8" and 4 1/2", and in any stroke length. You have your choice of a wide range of built-in valve assemblies: low or high voltage electrically controlled operation; standard or explosion proof; momentary air exhaust or maintained air pressure pilot valve operation; or mechanical operation for manual or direct-linked control. Whatever your pneumatic valving requirements there is a Bellows Air Motor with built-in valve to meet your needs. Wide range of mounting styles.

New Bulletin Write for this free new 36-page booklet. Dimensional specifications, technical data, wiring diagrams, case history studies, production and cost data. Address: Dept. CP-953, The Bellows Co., Akron 9, Ohio. Ask for Bulletin CL-50.



The Bellows co.
AKRON 9, OHIO

"Controlled
Air Power"

FOR FASTER, SAFER, BETTER PRODUCTION

When inquiring check CP 3237 on handy form, pgs. 2-3

PIONEERS OF PROGRESS



R. C. McCURDY

A consequence of our ever-increasing specialization is the growing demand for behind-the-scenes materials. Glycerine, for example, is not a volume consumer product but finds its way into a host of things that consumers eat, smoke, wear, or use in other ways. The Shell Chemical group R. C. McCurdy now represents, has made a real contribution to our well-being with . . .

SYNTHETIC GLYCERINE

The By-product That Became a Prime Product

FROM the beginning of the manufacture of soap, glycerine has been an available chemical material. But even in our recent era of mass-manufacture and mass-utilization of chemicals, it has been balky in price, unsteady in supply. Of the hundreds of volume uses it has been put to — from candy conditioning to a paint ingredient — it never derived the status of a prime product, but remained a soap by-product.

It was in 1948 that the Shell Chemical Corporation put a plant on stream to produce 35 million pounds of glycerine each year. This was the first time that glycerine had been synthesized commercially and the first time that it had been made on an economical basis in this country from starting materials other than natural fats. It stands as one of the chief achievements of the group Richard Clark McCurdy was placed in charge of when he became president of Shell Chemical Corporation.

After receiving an AB and an Engineering Mines degree from Stanford University, McCurdy started his career with Shell Oil in the Ventura, California, oil field in 1933. During the next two years he worked as a rotary helper, gauger, repairman, and well puller before his appointment as a junior engineer. He subsequently advanced through increasingly responsible positions in the company's California oil fields to the top levels of oil company management. His appointment to the presidency of Shell Chemical Corporation earlier this year would seem to indicate the importance of growing petrochemical operations.

The Road to Glycerine

Long before Shell's synthetic glycerine plant was built, it was realized that industrial uses of glycerine were increasing. In 1920 domestic production had been 54 million pounds. In 1946 it had risen to 157 million pounds. The pre-war price average had been 16 cents per pound — but market fluctuations were the rule rather than the exception. For ex-

ample, the 1933 price was 10 cents per pound, but in 1927 it had been 32 cents and 1937 it was 29 cents. Despite obvious advantages in using glycerine, many manufacturers were leary of getting involved in the glycerine market.

Shell Chemical Company (later to become Shell Chemical Corporation and hereafter referred to by that name) had been started in 1929 as one of the first petrochemical companies. Its aim was to make chemicals from refinery products such as propylene, which up to that time had been little used. A year earlier a sister company, Shell Development, had been started. Its purpose was the discovery of new products and processes connected with petroleum, many of which Shell Chemical subsequently put on a commercial basis. As this account makes evident, the two companies share credit for the commercial synthesis of glycerine from petroleum raw materials.

One of the first tasks the researchers set for themselves was a study of the possibility of utilizing propylene. From propylene and chlorine chemist George Hearne managed to synthesize allyl chloride, a key building block for all of Shell's allylic chemicals, including epichlorohydrin and glycerine. By the time the depression hit, L. V. Steck, then Shell Development's director of Market Development, was introducing allyl chloride and other allyl derivatives to the markets. Dr. T. W. Evans, in charge of organic research for Shell Development was synthesizing new allyl compounds at a rapid rate by this time and began to consider the possibility of taking allyl chloride a few steps further and producing glycerine synthetically. Mr. Steck was enthusiastic about this possibility.

Getting all the necessary reactions worked out, however, was not such a simple matter. After a great many tentative processes had been examined in the laboratory, S. H. McAllister proceeded to develop a pilot plant for workable production of glycerine. Starting materials were propylene, chlorine, and caustic soda. The economics of such a process, however,

were obscured by the fact that glycerine prices could drop unpredictably to wipe out any profit margin. Hence, this work was virtually terminated in 1938 before all the final problems had been worked out.

War: A New Impetus

1939 brought World War II. The Germans, having developed a strong dependence on glycerine as a chemical intermediate also, were faced with a great shortage of it. Their answer to this was a special fermentation process which produced 13 thousand tons a year during World War I — and presumably was used in the second war also. However, they had to produce a considerable amount of by-product alcohol and were further required to perform a difficult purification of the glycerine they produced. Their process has been found uneconomical except in times of emergency.

To this country, of course, war meant a shortage of glycerine which was needed in dynamite in addition to all its usual uses. Even high pressure drives for home collection of waste fat did not fill the gap. So in 1943 Government authorization was received to design a 40-million-pound per year glycerine plant, but for a variety of reasons the project did not go to completion. In late 1945, Shell decided to go ahead on its own to complete the development and engineering of the process and bring it to a commercial stage that would uniformly produce high quality glycerine.

Just as this article went to press, Shell Chemical president McCurdy announced a new plant. Construction is starting immediately at Norco, La. By late 1954 this plant will make possible a 25 million pound per year increase in glycerine production. Thus, Shell moves forward to serve an even larger portion of the American glycerine market.

Most of the problems that plagued Shell at this point were in purifying their material. As by-products of synthesis steps, there came in a bewildering rainbow assortment of chemicals similar to glycerine which were hard to remove. It became necessary to find out how each of these impurities was produced in the processing steps and discover methods of eliminating it or removing it in the final purification. Dr. A. E. Lacomble, Shell Development's president, set up his team to solve the problems. Under the direction of Dr. R. W. Millar, the Physical Chemical Department of Shell Development worked out details of purification which would give consistently good results.

Engineering studies were initiated by Mr. A. J. Johnson, now vice-president of Development and Engineering for Shell Development. Dr. A. W. Fleer, coordinator of research at this time, took charge of integrating pilot plant work and engineering development.

Finishing procedures were worked out by early 1946, but the war having come to an end, Shell Chemical

(Continued on page 231)

Double Capacity At Lower Cost



Material falls from hopper into MIKRO-PULVERIZER, custom-built to meet Serutan's exacting specifications. After grinding and blending it is air-conveyed to MIKRO-COLLECTOR on floor above.

MIKRO-COLLECTOR operates at 330 cfm and handles 350 grains per cu. ft. of air. Horizontal screw and small vertical elevator deliver filtered material to classifier at right.

MIKRO'S INTEGRATED SYSTEM has again proven itself to be both a money-saver and a time-saver in the combined functions of grinding, blending and dust control.

At the SERUTAN plant in Newark, N. J., this unified method (made possible by the incorporation of the MIKRO low pressure air conveying system) has out-moded batch handling by providing a continuous, automatic flow of material from a No. 2 DH MIKRO-PULVERIZER on one floor, to a MIKRO-COLLECTOR* on the floor above.

* Patents Applied For by H. J. Hersey, Jr. and Pulverizing Machinery Company

PULVERIZING MACHINERY COMPANY
60 Chatham Road • Summit, New Jersey

PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE

100% increase in production . . . reduced cost due chiefly to elimination of batch handling . . . clean, dustless operation . . . improved working conditions . . . full product recovery . . . absolute protection of product against contamination.

This high-efficiency push-button operation steps up production by 100% for Serutan, but it can be engineered to meet almost any production quota on a wide variety of materials. It will pay you to investigate its possible application in your own plant set-up. Write now for information and descriptive literature.

MIKRO-PULVERIZER
MIKRO-ATOMIZER
MIKRO-COLLECTOR
REG. U.S. PAT. OFF.

When inquiring check CP 3238 on handy form, pgs. 2-3

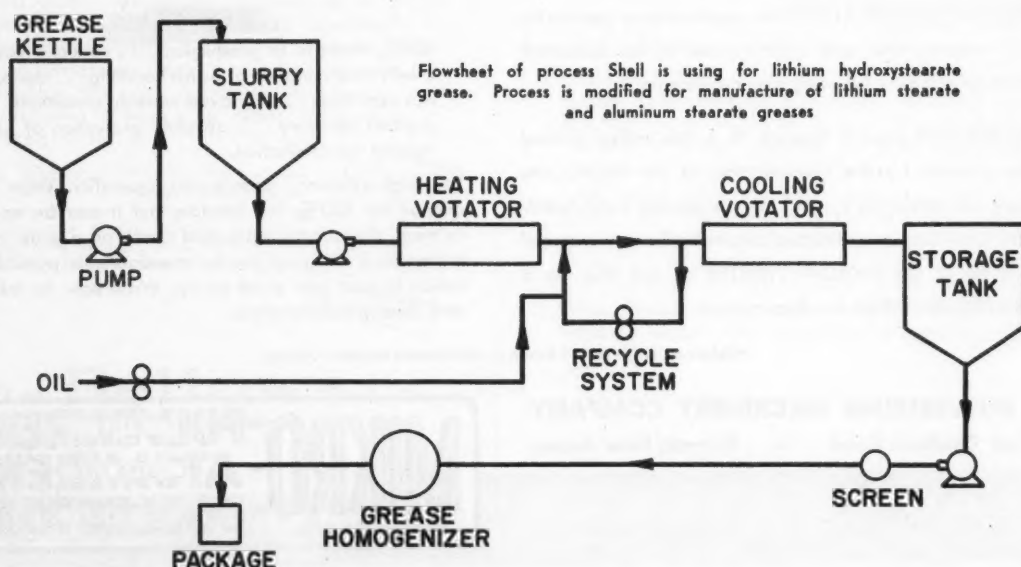
*new solutions
of processing problems*

of Shell's Lithium Hydroxystearate Grease

Improved method cuts soap costs substantially while it lowers labor costs and eliminates fire hazards



Semi-continuous grease-making is responsible for the high quality, good color, and uniformity of greases



PROBLEM: Capacity of batch process of making lithium hydroxystearate (multi-purpose) grease at Martinez, California, plant of Shell Oil Company could not meet market demands. Further, the fire hazard attendant to the relatively high temperatures required in making lithium greases limited manufacture to products containing high-flash oils.

Customary way of cooling (after cooking and before milling) was costly, too, because it took so much time and tied up kettles needed for other purposes. At Shell, the multi-purpose grease was cooled by stirring and circulating in conventional grease kettles. Grease produced in this way showed a tendency to vary in consistency from batch to batch.

Solution: In 1951, Shell switched to a semi-continuous method which has been described recently (CHEMICAL PROCESSING, April 1953, pp 136-7). The system is represented schematically in the accompanying flowsheet, and briefly is operated as follows:

Hydrogenated castor oil is saponified with lithium hydroxide in the presence of water and some



Votator heat exchangers for heating and cooling grease are complete with instrumentation for control

mineral oil in a conventional batch grease kettle. The soap concentrate is essentially dehydrated at 285°F; the prescribed additives incorporated; and additional mineral oil added. This concentrate, which represents about 50% of the finished grease, is then pumped to the large slurry tanks which feed the continuous part of the system.

The concentrate is moved at a constant rate by a Schutte & Koerting positive displacement pump from slurry tank through a Votator heating and mixing unit, and into a recycle system. Here, an equal weight of oil is injected and the mixture sheared by means of a suitably adjusted plug cock. Grease is then pumped through the Votator cooler into temporary storage, from which it is screened, homogenized under vacuum, and packaged.

The Votator heater is Dowtherm-jacketed in this case, while the Votator cooler is water-jacketed. Both are instrumented for close temp control.

Results: Process makes an excellent grease at a much higher production rate and lower labor costs. Fire hazard has been eliminated, grease is uniform in consistency, and soap costs have been reduced substantially while maintaining the same quality as batch-processed grease. Kettles are not tied up for the cooling step.

Processing Other Greases

Shell has been using modifications of this method to make lithium stearate grease and aluminum

(Continued on page 12)

ISN'T THIS A CLEAN WAY TO FILTER FIVE MILLION POUNDS OF SOLIDS PER DAY?

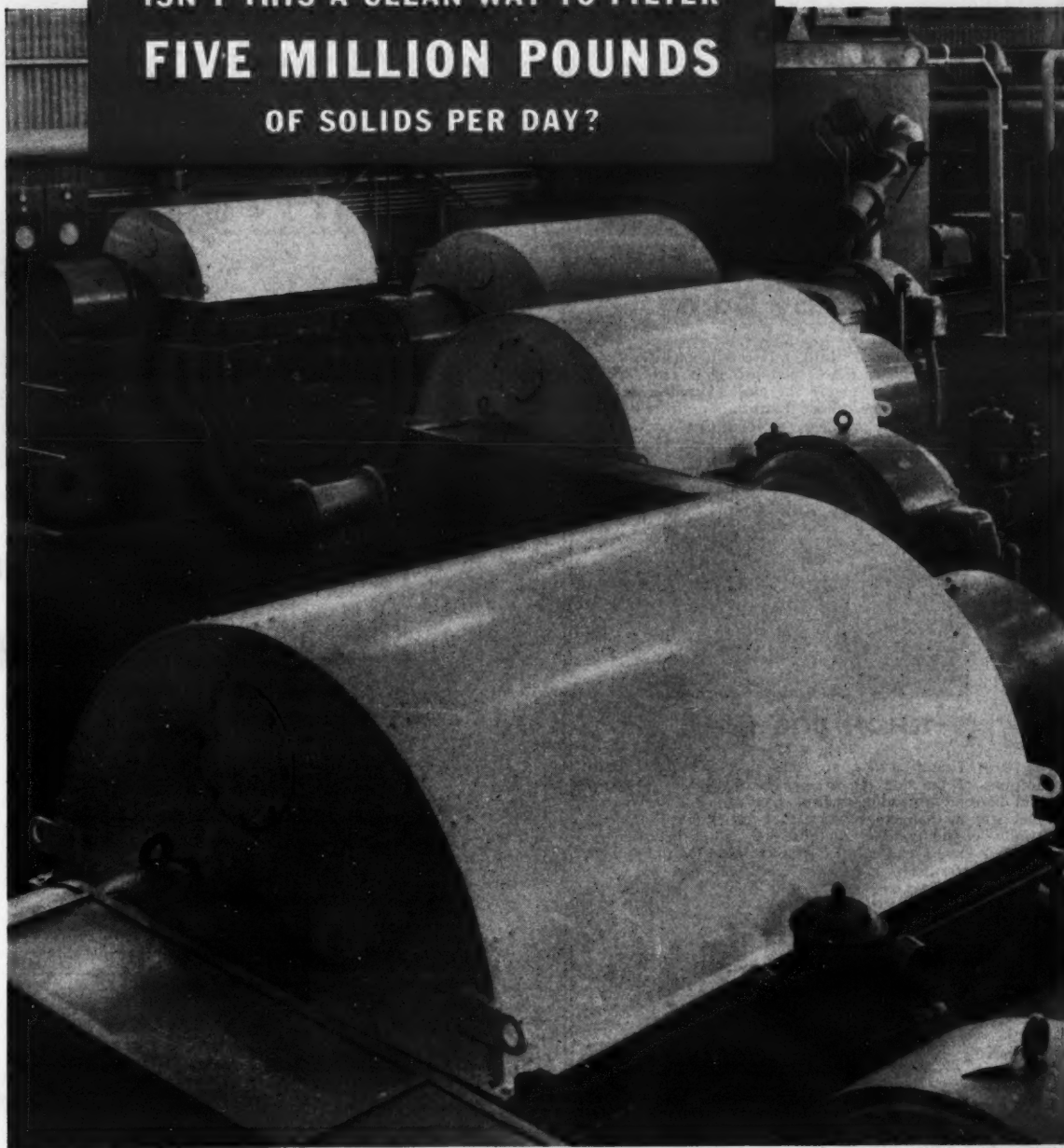


PHOTO COURTESY ARCH SPROUL

THAT'S what these four BIRD Continuous Centrifugal Filters are doing for Duval Sulphur & Potash Company, Carlsbad, New Mexico — and you can judge for yourself how neatly and cleanly they do the job.

The Birds handle the concentrated potash from the flotation cells. Duval gets a drier cake, does the job at lower first cost, operating cost and main-

tenance cost, and saves a whole lot of floor space in the bargain.

Why not find out what BIRD FILTERS can do to clean up *your* filtering operation and do it better and cheaper? The *Bird Research and Development Center* is fully staffed and equipped to give you the answers promptly, reliably and without obligation on your part.

BIRD MACHINE COMPANY • South Walpole • Massachusetts

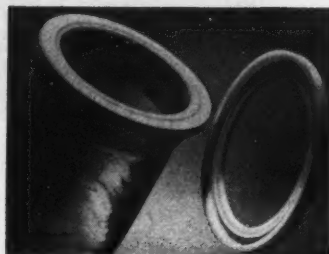
When inquiring check CP 3239 on handy form, pgs. 2-3

*For Perfect seals
on Glass Piping*

TEFLON*

**Dog Legs and Envelopes
molded by Dore'**

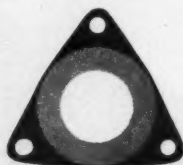
• Our technical skill, production facilities and exclusive molding processes, combined with TEFLON's® mechanical properties, assure the most efficient seals for your glass pipe connections. Featuring uniformity and precision, TEFLON products, molded by Dore', meet your most exacting requirements.



TEFLON DOG LEGS

Style E-11

• These gaskets are uniformly sintered. Both sections of the dog leg are of the same density. Top and bottom protruding sealing faces are not wavy . . . they stay in their respective planes throughout the entire gasket circumference. Because of their precision fit on your glass pipe, Style E-11 gaskets seal with minimum bolting pressure.



TEFLON ENVELOPES

Style E-16

• Dore' non-porous TEFLON Envelopes, cushioned with a resilient gasket, assure a perfect seal for glass flanges in any service. A special process developed by Dore' prevents the TEFLON Envelope from splitting or breaking on the inside diameter. Neoprene, compressed asbestos and woven asbestos are generally used as fillers.

* duPont Trademark

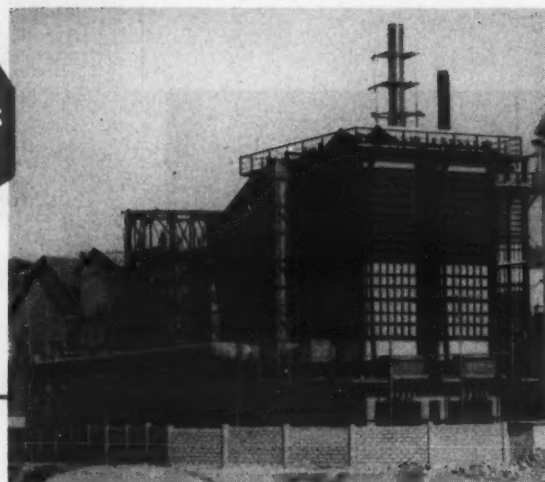
John L. Dore', Co.

SALES AGENTS IN U.S.A. FOR JOHN L. DORE', INC.
MOLDERS OF "TEFLON" AND "KEL-F" SHAPES
P. O. BOX 7772 • HOUSTON 7, TEXAS



*new solutions
of processing problems*

Sulfuric acid plant in Italy,
showing the reactors at right

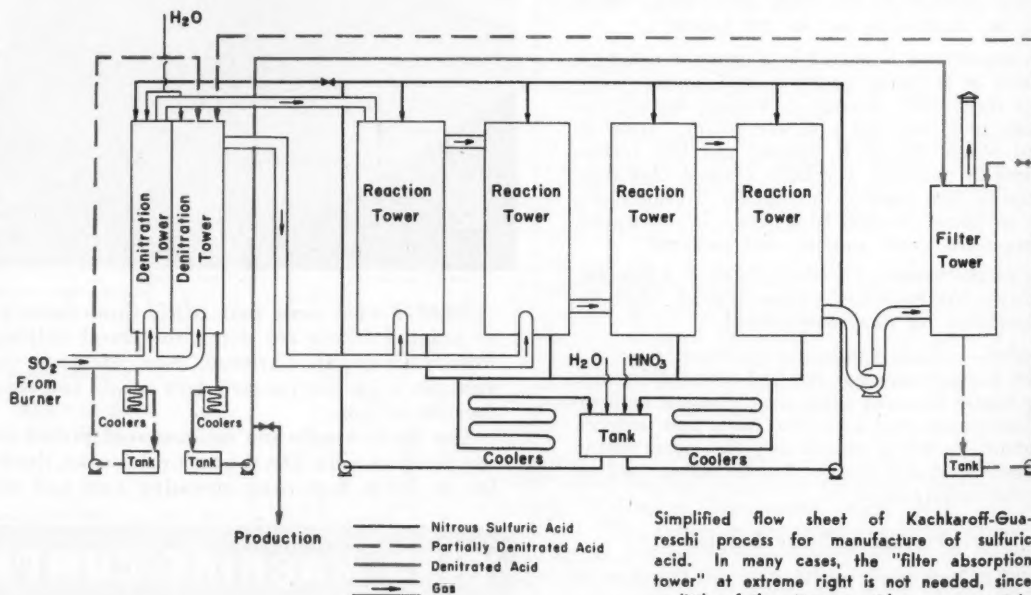


Fast Reaction and High Conversion

Bring Low-cost 60° Be' H₂SO₄

**Europe-proved process, designed
to replace lead chamber method,
makes acid at low cost, shows
99.9% conversion**

THE Kachkaroff-Guareschi sulfuric acid manufacturing process, now being introduced to the US, shows a 99.9% conversion of sulfur dioxide to acid, and such a fast overall reaction that the specific reaction space need be only 0.12 cu ft per lb of sulfur per 24 hr. Designed to replace the old lead



Simplified flow sheet of Kachkaroff-Guareschi process for manufacture of sulfuric acid. In many cases, the "filter absorption tower" at extreme right is not needed, since so little of the nitrogen oxides are present in the vented gases

chamber method, the European-process plant can be capitalized at a little more than half the cost of a chamber plant, and produces a 60° Be' acid at lower cost than other processes, judging by experience gained in Europe.

Three plants, total capacity 200 tons/day, have been operating, with satisfactory results, for a number of years in Italy. Two additional plants for England are being erected, both of them to manufacture the acid from spent oxide, total capacity 150 tons/day. Possibly the most interesting part about the process is the small volume of a plant with regard to the production. There are practically no sulfur gases in the stack — less than 0.001%, calculated as SO₂.

The nitrous compounds are soluble in concentrated sulfuric acid, and are allowed to form a highly oxidizing compound. Reaction between sulfur dioxide, oxygen and nitrous vitriol takes place rapidly, in the liquid phase, in contact with nitrous-persulfuric acid, and with almost simultaneous regeneration of the nitrous vitriol, at a high oxidizing grade.

Owing to the high concentration of acid circulated in the system, most of the coolers and piping can be made of iron, the use of lead being reduced to a minimum. Polyvinyl chloride linings (Geon), and in sheets, are being used with success in many parts of the plant.

Sulfur-burning furnace and accompanying dust chamber are of conventional design, and hence are not indicated on accompanying flow sheet. Neither is a concentrating tower which may be used when it is desired to concentrate the 60° Be' acid to 64° Be' by countercurrent contact with the incoming hot SO₂ gases.

Note, as a special characteristic of the process, that most of the nitrous sulfuric acid is recirculated through the reactors, and only a relatively small amount is sent to denitration. In fact, all acid going to the denitrator represents the surplus which results from volumetric expansion when the acid is formed.

Valves control the passage of gas to the reaction towers, so it is possible to vary the composition of the liquid in the different towers. By the same token, valves can be manipulated to change from series to parallel operation of the reactors, or vice versa. One reactor may be taken off-stream for repairs without affecting general working of the plant. Similarly, one bank of coolers may be taken off-stream for maintenance or repair.

Apart from furnace supervision, plant is operated by one man per shift. Process control is so simple that this operator does not have to be highly skilled. Percentage of sulfur dioxide in burner gases may vary over a period of several hours from 3 or less to 12%, without adjustment being necessary to control of plant.

Plant requires less than 1 lb HNO₃ per 100 lb of H₂SO₄, and less. (Of course, the gaseous products of an associated ammonia oxidation plant can also serve as a source of nitrogen oxides.) Power consumption of the acid section is less than 1 kwh per ton of H₂SO₄.

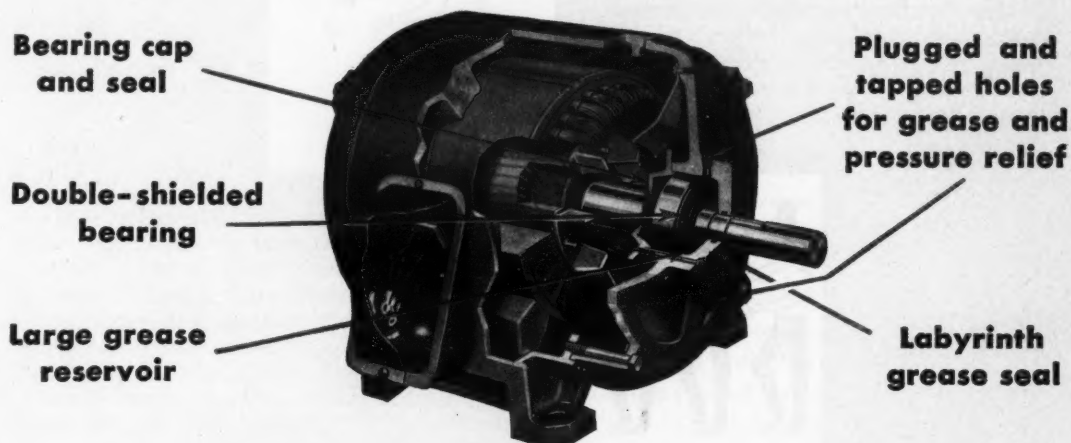
(Continued on page 12)

Here Are Facts You Should Know About Electric Motor Bearings

An ideal motor bearing would operate for indefinitely long periods under all types of conditions without requiring any attention whatever. However, in the opinion of our engineers, such a bearing and its attendant lubricant are not yet available on the commercial market. Consequently, bearings for many types of operations, particularly where overloading, extreme temperature ranges and chemical and dirt

laden atmospheres are involved, require special lubricants or regular lubrication schedules.

Of course, bearings suitable for many kinds of operation under normal conditions can be built to require no attention for very long periods — usually several years. Allis-Chalmers can supply sealed bearings in all frame sizes through 505 on short delivery and without extra cost for applications of this type.



Which is the Best Design for *Your* Application?

We believe that the design used in standard Allis-Chalmers drip-proof, tefc and explosion-proof motors represents the best design for most industrial users.

The Allis-Chalmers standard design consists of a pre-lubricated, double-shielded bearing mounted in the end housing with a generous grease reservoir. Plugged and tapped holes are provided for grease and for pressure relief. Under normal operating conditions, this design will operate as long without attention as any other type of bearing in use

today. But where difficult operating conditions make re-lubrication desirable, it can be done as part of the normal lubricating-routine without dismantling the motor.

The large grease reservoir and shielded bearing design assure that grease lost from the bearing due to high operating temperatures or other causes will be replaced automatically.

For further information on bearing design and other features of Allis-Chalmers motors, call your nearby Allis-Chalmers District Office or Authorized Distributor.

A-4130

ALLIS-CHALMERS



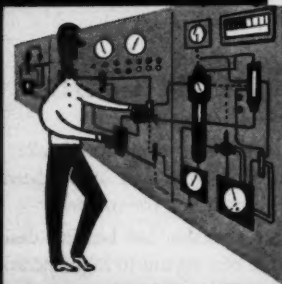
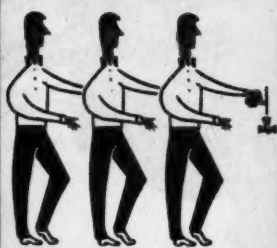
When inquiring check CP 3241 on handy form, pgs. 2-3

First of a Series

One man can act... more quickly and effectively

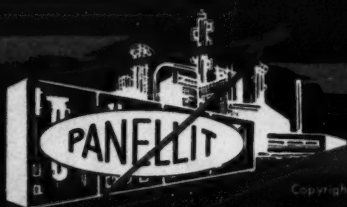
INDUSTRY has now realized that the completely automatic plant without any operator is generally impractical. Only the human mind can apply the judgment necessary to supplement instrumentation... adjust for corrosion... and be able to change constantly with advancing technology.

HOWEVER, the advantages of only one operator are very important. He can operate with singleness of purpose and co-ordination that no two or more operators could duplicate. BUT, he needs help. He needs information. *This is the basis of the PANELLIT business.*



... store it up... record it or bring it to the operator's attention if "trouble" occurs. All these combine as PANELLIT INFORMATION SYSTEMS... enabling the operator to know... and to act quickly and effectively for better process control.

Write for Panelgraph Bulletin PI-153.



Copyright 1953 - Panellit, Inc.

PANELLIT, INC., 6312 North Broadway, Chicago 40, Illinois



PANELLIT integrates automatic control into an overall information system. PANELGRAPHS using graphic symbolism make it possible for the operator to visualize a large mass of instrument data. PANALARM ANNUNCIATORS watch the process... allow the operator to concentrate on essentials... signal when any "off-normal" condition develops. PANASCAN SCANNING SYSTEMS handle masses of information... weed out the

H₂SO₄ Process

(Continued from page 11)

The process may be adapted for simultaneous production of sulfuric and nitric acid (a proportion of the latter being of 94 to 98% concentration). Another modification permits use of the process for making sulfuric acid from gypsum.

(Patent license rights, with complete technical and engineering services are available through International Processes, Incorporated, Dept. CP, 624 S. Michigan Ave., Chicago 5, Ill. . . . or for more information check CP 3243 on handy form, pages 2 and 3.)

Lithium Hydroxystearate

(Continued from page 9)

stearate grease since 1946. Before that, aluminum grease was cooled in shallow pans. The switch to continuous cooling under controlled temperatures brought about pronounced benefits. Besides being extremely awkward and time and labor consuming, the pan-cooling method is such that close temperature control was practically impossible, with the result that variations in consistency were high. In addition, the fire hazard attendant to low-flash oils prevented their use in making lithium greases.

To make lithium stearate grease, the process is modified by preparing a slurry of lithium stearate and oil in the slurry tanks, employing a Cornell "hot" homogenizer (operating under vacuum) to deaerate, dehydrate, and homogenize each batch of slurry before it goes to the Votator heater. Lithium stearate greases are cooled statically in a bank of air-cooled tubes.

The aluminum stearate grease process is essentially the same as the lithium stearate grease process except that the grease is cooled to a pre-determined temperature in the Votator cooler and then gelled in time tanks. Cooling tubes and the recycle system are not employed in making aluminum greases.

(The Votator heat exchanger is a product of The Girdler Company, Votator Division, Dept. CP, 222 E. Broadway, Louisville 1, Ky. . . . or for more information check CP 3244 on handy form, pages 2 & 3.)

Catalyst held in vessel by readily removed folding screens . . .

"books," slipped into small space at top, unfold to prevent beads from going up with gas flow

Problem: Gas flowing upward through a horizontal cylindrical vessel filled with catalyst beads to within 18" of the top, blew the beads upward with it. Company decided to use a screen to hold the beads down, but the trouble was that the screen had to be taken out regularly for cleaning and when charging fresh catalyst. The small

When inquiring check CP 3242 on handy form, pgs. 2-3

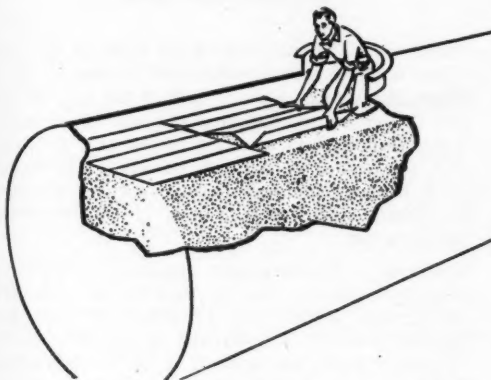
space atop the bead bed made this operation impossible with ordinary screening.

Solution: Although there wasn't enough room for a man to crawl along the top of the catalyst bed, there were three manholes in which a man could stand. Study indicated that either of two types of screens could be used, each of which could be removed and reinstalled through the manholes. One was a rolling screen made up of spiral wire elements with a mechanism by means of which it could be rolled back and forth. The other type, eventually getting the nod because of its lower cost, was a folding screen.



"Book" consists of screens hinged together

This screen, called a "book," is shown in the photograph. Six books, each consisting of five leaves joined together by hinges, covered the entire catalyst bed. By standing over the manhole and crouching (see drawing), a man can very

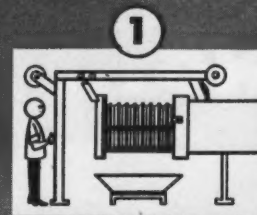


Screen books are unfolded to cover catalyst bed by man working from manhole

readily put a closed book through the manhole, open it up, and locate it in its proper place on the catalyst bed. Procedure for removing "book" is just as simple.

Results: Idea has proved to be completely satisfactory ever since installation — approximately six years ago.

(Method was worked out by Multi-Metal Wire Cloth Co., Inc., Dept. CP, 1350 Garrison Ave., New York 59, N. Y. . . or reader may secure more information by simply checking CP 3245 on convenient Reader Service slip between pages two and three.)



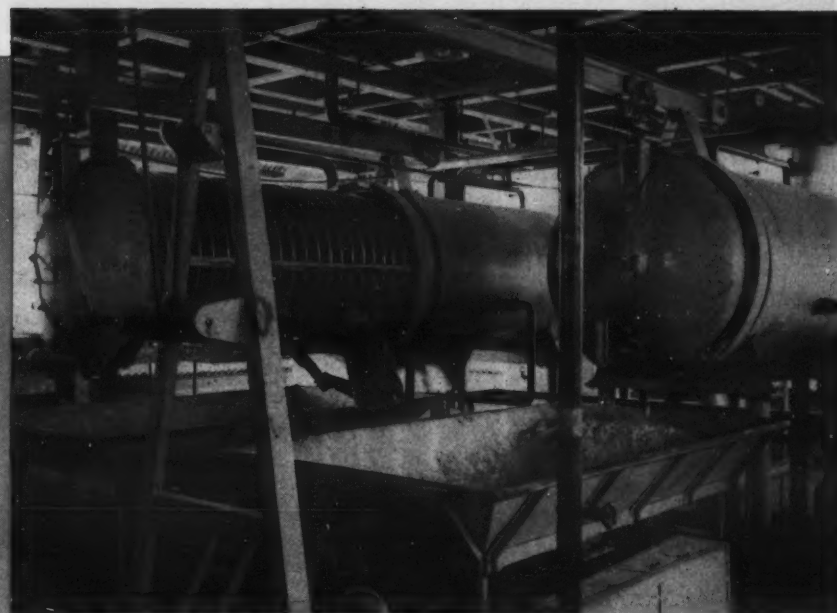
One motion unlocks the quick-opening filter cover. The all-metal leaves roll out of the filter as a unit.



Operator taps leaves to drop cake into trough, hopper or wagon for recovery or disposal.



Then he returns clean leaves into filter. The cover locks pressure-tight with one swift motion.



Large-capacity filter is easy to clean between cycles

One man can open this filter, dump the cake from it, and close it again—in about ten minutes!

That's one reason why the Niagara Style "H" Filter can cut your costs on large liquid filtration and solids recovery applications.

Niagara can now offer you both vertical and horizontal pressure-leaf filters, with unit sizes from 20 to 1500 square feet. If you are a big user of filtration, you'll want all the facts on what these filters can do for you. Just write or mail the coupon today.

LARGE CAPACITY—The Style "H" Filter delivers high-clarity filtrate at rates up to 45,000 GPH. Sizes range up to 1500 sq. ft. of working filter area in one compact, leak-proof unit.

ALLOY CONSTRUCTION—AT LOWER COST—Because of its simple fabri-

cated design, you can have the Niagara Filter in stainless steel and other alloys, for corrosion resistance, at low cost. Special linings are available, too.

EXCELLENT CAKE-WASHING CHARACTERISTICS—Almost true displacement washing.

JACKETING IS NO PROBLEM, EITHER—The filter shell can be readily jacketed for heating or cooling at minimum additional cost.

LOW DAY-TO-DAY COST—Tending the filter is a part-time job for one man. The all-metal leaves rarely require cloths—another big saving.



Niagara Filters DIVISION
AMERICAN MACHINE AND METALS, INC.

Dept. CP-953, East Moline, Illinois

IN EUROPE: Niagara Filters Europe, 36 Leidsegracht, Amsterdam-C, Holland

NIAGARA FILTERS Division, American Machine and Metals, Inc.
Dept. CP-953, East Moline, Illinois

Please send information on
Niagara Pressure-Leaf Filters.

☐ Horizontal (Style "H") ☐ Vertical

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 3246 on handy form, pgs. 2-3

It Takes **GOOD TUBING** To Make **GOOD PIPING...**



and **WELDCO**
Makes Only the Best!

The fabricated steel piping, shown in the photo above, required the best tubing available. WELDCO was chosen for this important job because it met the rigid specifications of the buyer. It was selected, also, because of its excellent fabricating qualities . . . easy to bend, form, weld and assemble.

WELDCO is lightweight and corrosion-resistant . . . has a smooth inside finish,

exceptional strength, and complete uniformity throughout. It's available in Stainless Steel, Monel, Inconel, Nickel, and Cupro-Nickel, in tube and pipe sizes from 3" to 30", Schedules 5 and 10, and 3" to 12", Schedule 40.

Whenever you need dependable tubing for special problems—for regular applications—specify WELDCO, your best buy in top-quality tubing.

Whatever Your Needs In Tubing . . . You're 'Way Ahead With WELDCO

THE YOUNGSTOWN WELDING & ENGINEERING CO.

3721 OAKWOOD AVE. YOUNGSTOWN, OHIO

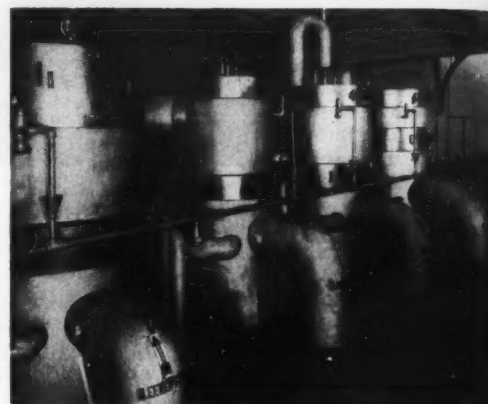
When inquiring check CP 3247 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Removable insulation simplifies feedwater heater inspection . . .

permits checking for possible tube leaks without damaging insulation

Problem: At a Massachusetts generating station of the New England Electric System, a procedure was needed that would permit inspection of five feedwater heaters without damaging the insulation. For the inspection, it is necessary to expose the head and bolted joints of each heater. Bolts are then lifted to check for erosion and the possibility of tube leaks.



Four feedwater heaters with removable insulation are shown in photograph

Water from the condenser flows through the feedwater heaters, four of which are shown in Fig 1. Water flows from right to left at the rate of 325,000 lb per hour. Supplied at from 70 to 110°F, water is heated successively up to 115, 233, 283, 352, and 462°F in the five heaters. The successively higher heater temperatures require increasing insulation thicknesses, which is an additional complication.

Solution: Custom-made insulating pillows of varying thicknesses held in place by two removable sheet metal jackets were provided for each unit. Mineral wool block insulation in 6 x 36" sections, 1½ or 2" thick, was applied in one or two layers. Total insulation thicknesses on the five heaters were 2, 2, 3, 3½, and 3½" from lower to higher temperatures.

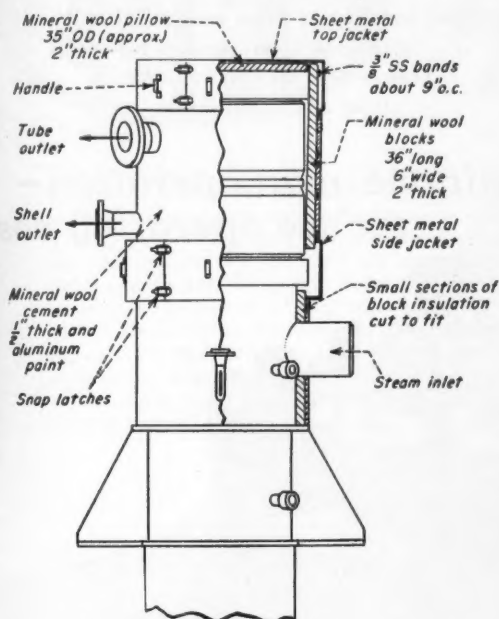
As shown in Fig 2, the cylindrical surface of the head of heater is insulated by the layer of mineral wool blocks, which are secured by ¾" stainless steel bands on about 9" centers. The insulating blocks extend from the edge of the flange to about two inches above the top of the heater. Smaller sections of the insulation were cut to fit around connecting inlet and outlet lines and are tightly banded in place.

The insulating pillow, consisting of loose mineral wool encased in asbestos cloth, is about 35" in diameter, covering the entire top surface of the heater. Since it is not secured to the heater in any manner, the pillow is easily removed and

NEW SOLUTIONS of processing problems

replaced. Sheet metal top jacket, equipped with handles and snap latches, protects the insulating pillow and the tops of the mineral wool blocks. All insulation surfaces not covered by the two jackets are finished with a $\frac{1}{2}$ " layer of mineral wool cement and two coats of aluminum paint.

Results: Insulating pillows secured by the removable metal jackets simplify feedwater heater inspection and allow the head and bolted joints



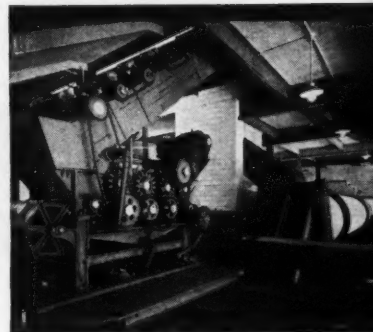
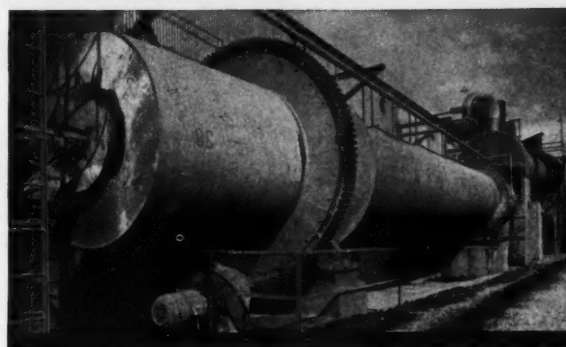
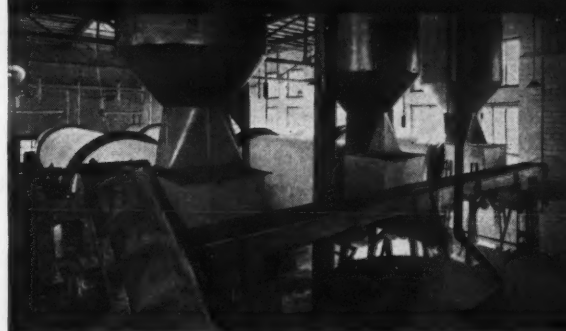
Indicates application of insulation on one heater

of each heater to be exposed without damage to the insulation. Bolts can then be removed and head lifted to ascertain the condition of the tubes. Insulating pillows and metal jackets are installed again on heaters without loss of time and material to replace or patch damaged insulation.

(Courtesy of Industrial Mineral Wool Institute, Department CP, 441 Lexington Avenue, New York 17, New York.)

The 24th Exposition of Chemical Industries will be held in the Commercial Museum and Convention Hall, Philadelphia, Pennsylvania, November 30 through December 5. In compliance with our past policy, the November issue of **CHEMICAL PROCESSING** will carry a section devoted to the new and interesting developments which will be displayed.

**more than 50 years
of experience in
designing and
building dryers
for industry...**



KNOW THE RESULTS BEFORE YOU BUY

Louisville engineers will test your dryer needs in our laboratory. When required, a pilot model will be checked in your plant before full-size dryers are built.

Louisville's creative engineering pre-determines results for you!

Louisville dryers

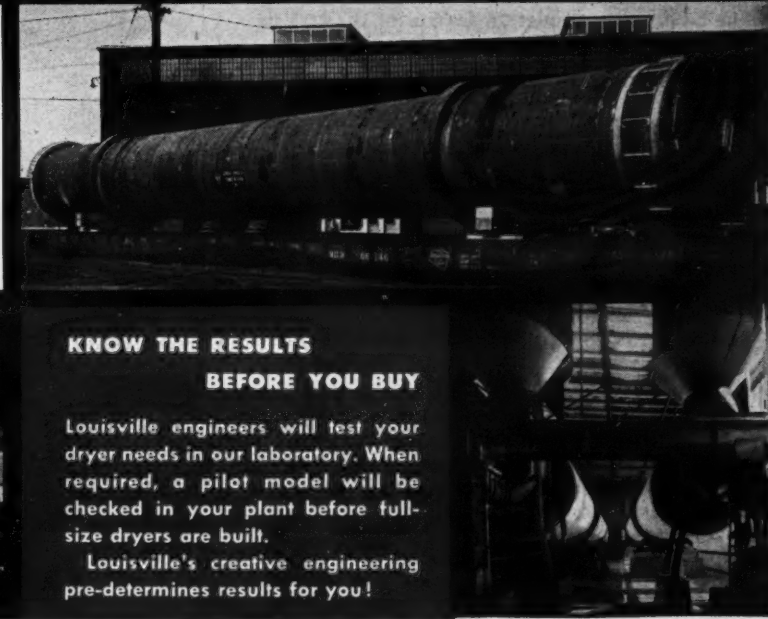
**used throughout
the world for
great efficiency
with low maintenance**

**LOUISVILLE DRYING
MACHINERY UNIT**

**GENERAL AMERICAN
TRANSPORTATION CORPORATION**

Dryer Sales Office: 139 S. Fourth Street, Louisville 2, Kentucky
General Offices: 135 South LaSalle Street, Chicago 90, Illinois
In Canada: Canadian Locomotive Co., Ltd., Kingston, Ontario

OFFICES IN ALL PRINCIPAL CITIES



When inquiring check CP 3248 on handy form, pgs. 2-3

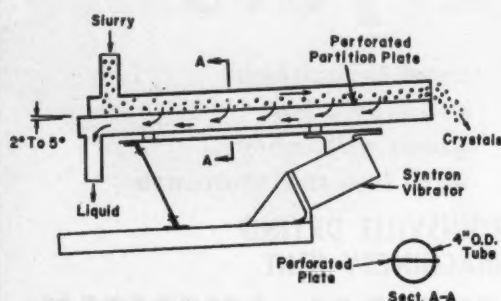
Crystals are dewatered on the move . . .

vibrating tube shakes off mother liquid on the way from crystallizer to centrifugal

Problem: Eastman Kodak Company needed a simple yet efficient way of draining mother liquor from silver nitrate crystals on their way from crystallizers to centrifugals in the Kodak Park Works, Rochester, New York.

Solution: A vibrating tube device, shown in accompanying drawing, does the trick. Upper and lower segments of the tube are separated by a perforated plate, and this assembly is mounted on a Syntron vibrator so it can be set at 2 to 5° from horizontal.

Slurry enters above perforated plate, but at low



Vibrating tube arrangement separates silver nitrate crystals from their mother liquor

end of tube. Crystals are separated out by the vibration which also carries them to outlet end at right. Mother liquor flows through holes in the perforated plate, to bottom segment, from which it flows to a solution tank and back into the crystallizer. About 25 lb/min of the crystals are handled in the unit.

Results: Simple dewatering method permits more efficient operation of the centrifugals; each can put out more crystals per unit of time.

(Information courtesy of Eastman Kodak Co., Dept. CP, 343 State St., Rochester 4, N. Y.)

Hydration of cement minimized during process water clean-up in asbestos-cement plant . . .

cement is centrifuged out and returned to process; shower water is cleaner, product better

Problem: A common objection to handling process water by "save-alls" or catch sumps in the asbestos-cement industry (Transite and similar products) is that the cement may be subjected to severe hydrating conditions for periods of 90 to 150 minutes, or even longer. Because of this hydration as the cement is passed through the recovery system, fresh cement usage is high and there is less reground scrap usage.

Besides, shower water is sometimes dirty enough to shorten felt life and decrease "pick-up" ability.

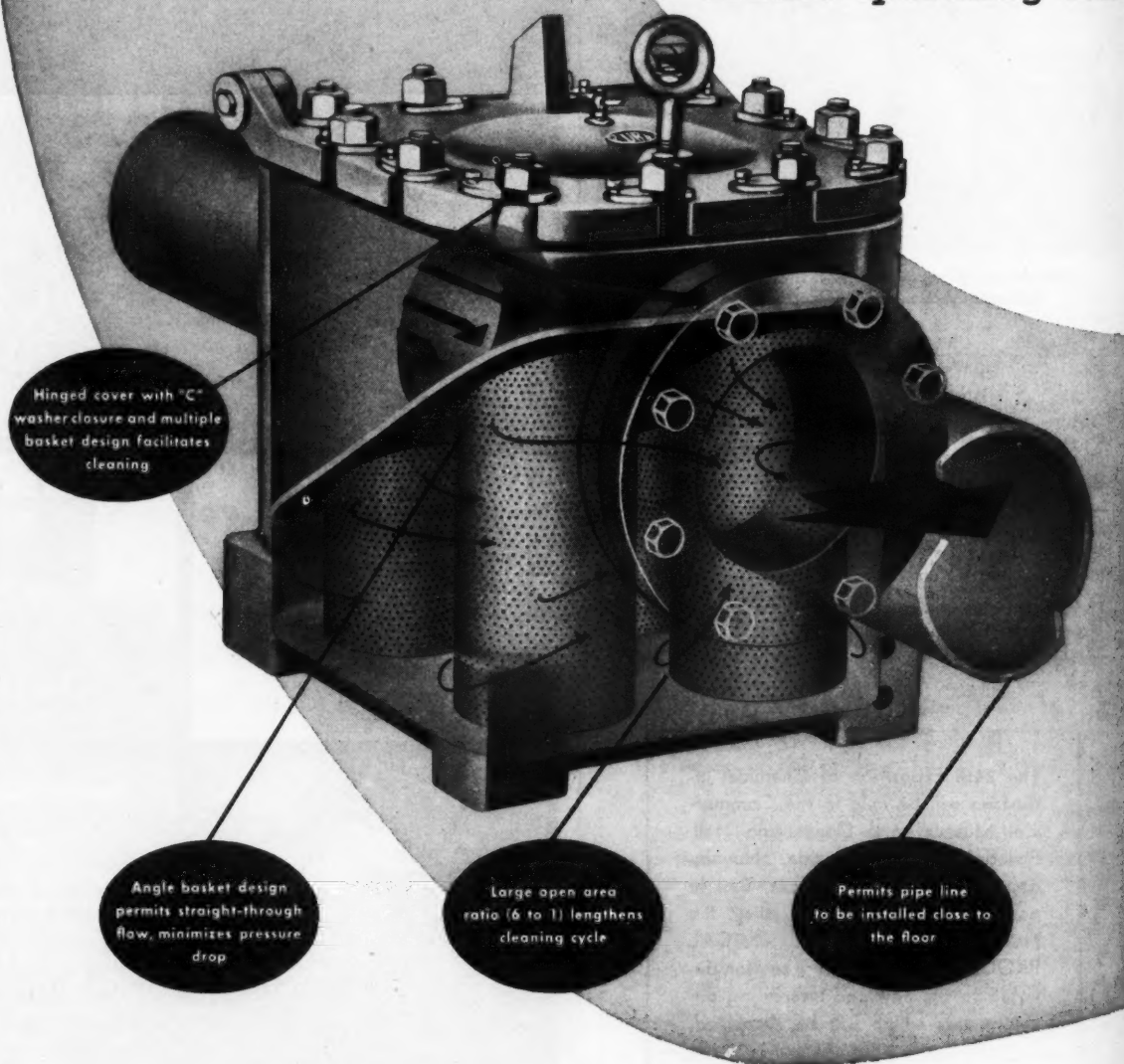
LONGER INTERVALS

ZURN

SINLEX MULTIPLE BASKET

LPD STRAINERS permit one-man operation—
reduce operating cost

Zurn LPD Strainers permit high rates of flow with remarkably low pressure drop. They provide continuous flow of liquids, immeasurably improving the handling of fluids such as oil, chemicals, water, through pipe lines. They provide the utmost protection from costly shut downs.



BETWEEN BASKET CLEANING

provided by large open area ratio of



SINLEX MULTIPLE BASKET

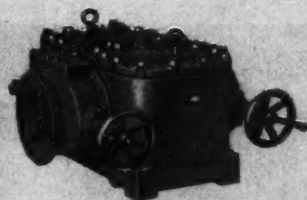
LOW PRESSURE
STRAINERS

The angle basket design of this strainer is typical of how Zurn Low Pressure Drop (LPD) Strainers have been design improved for correct circularity. This angle type Multiple Basket Strainer permits straight-through flow, minimizing the pressure drop and insures complete retention of strained particles when basket is being removed for cleaning. A feature of this strainer is the small space required for its installation. It permits pipe line to be installed close to the floor. It has ample waterways, smooth inner walls, correctly sized and perforated baskets, and affords maximum protection

for all types of mechanical units connected with pipe lines. Zurn LPD Strainers are held to close tolerances for materials, shapes, and dimensions, assuring the utmost in strength and factors of greater safety essential to continuous operation.

Zurn LPD Strainers are widely used to protect close tolerance control devices and delicate mechanisms, also to protect product purity. Their large open area ratio (6 to 1) lengthens intervals between need for cleaning baskets. Zurn Fluid Handling Engineers are available for consultation on your particular fluid handling problem.

There is a ZURN LPD Strainer for every fluid handling purpose



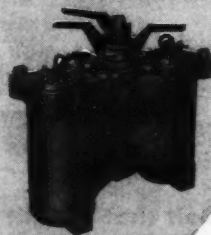
Zurn LPD Duplex Multiple Basket Strainer, Gate-Type.



Zurn LPD "Y" Type Strainer, available in any cast material and for high pressures.



Zurn LPD Sinlex Strainer, available in offset and straight-through types.



Zurn LPD Duplex Multiple Basket Strainer, Plug-Type.

Zurn LPD Strainer applications include fluid handling lines for lubricating and fuel oil, and oil during the refining process; a wide range of chemicals produced and used by the various process industries; public utility power plants; power stations; industrial plants; ships and high temperature installations. Zurn Fluid Handling Engineers are available for consultation.

WRITE FOR ZURN LPD STRAINER DATA MANUAL NO. 952

This Manual includes previously unpublished pressure drop data and gives useful, factual information on fluid handling.

Zurn Engineered Low Pressure Drop Strainers are patented and patents pending. Copyright 1953.

J. A. ZURN MFG. CO.

INDUSTRIAL DIVISION • ERIE, PA., U.S.A.

In Canada: Canadian Zurn Engineering Ltd., Montreal, 25, P.Q.

J. A. ZURN MFG. CO.

Industrial Division, Erie, Pa., U.S.A.

Please send me Zurn LPD Strainer Data Manual No. 952.

Name

Position

Company

Street

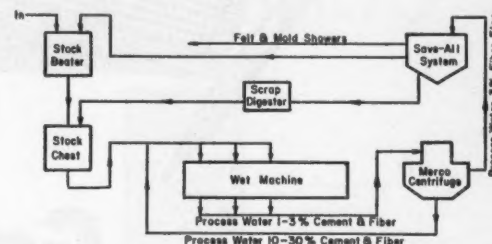
City and State

Please attach coupon to your business letterhead. Dept. CP

NEW SOLUTIONS of processing problems

In turn, there is a carry-over of cementitious material to waste disposal lines. Then too, substantial quantities of material are lost when the process is shut down or given a blow-down.

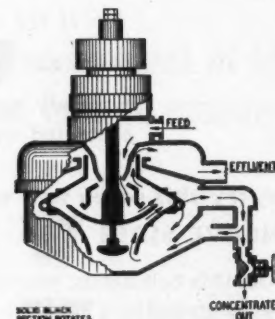
Solution: The simplified flowsheet illustrates how a Merco centrifuge is used to overcome these difficulties. Under the old system, the process



Process for cement recovery and process water clean-up in the asbestos-cement industry

water, containing 1 to 3% cement and fiber, would go directly to the save-all system. Three streams instead of two would leave the save-all system, the third one going to the feed end of wet machine, carrying the recirculated cement and fiber.

With the new process, water containing 1 to 3% solids can be concentrated to any desired percentage up to 30%, at the rate of 100 to 150 gpm (per centrifuge). Most important, the concentrated water is quickly returned to the process, and the cement is not required to cycle through the extensive recovery system under conditions leading to hydration. Note that only fiber floc is discharged from the centrifuge to the save-all system.



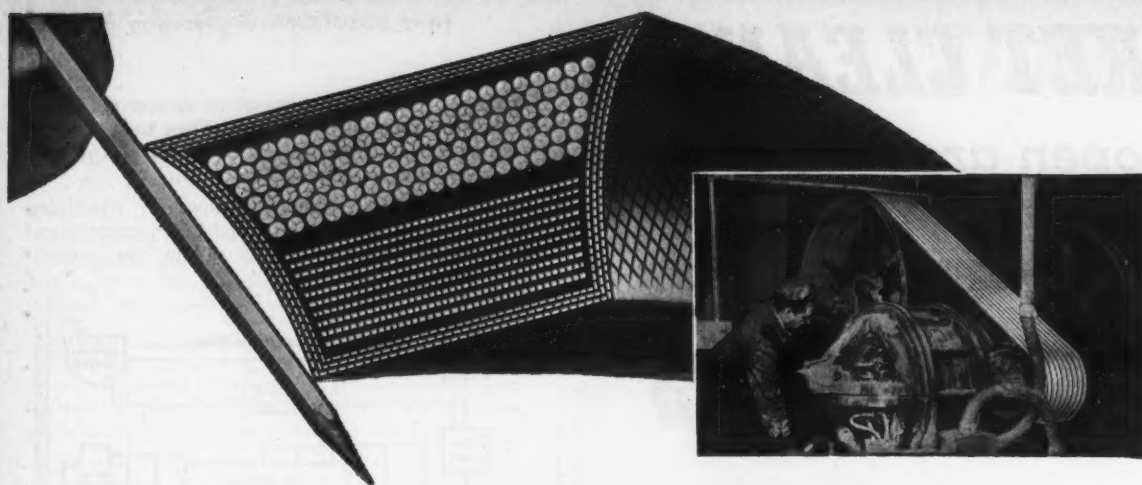
Reveals how fluids flow through centrifuge used in recovery process

normal color mold flow, thereby maintaining color system isolation.

Results: In addition to the obvious advantages stemming from prevention of cement hydration, the system also provides other features. For example, reduction of density variation in the water returned to process means easier control of wet machine operation. Water going to showers is cleaner, which means longer felt life and better product control. Product strength is up, and sewage problems are minimized.

(Continued on next page)

When inquiring check CP 3249 on handy form, pgs. 2-3



NEW SOLUTIONS of processing problems

(Continued from preceding page)

The reduced distance through which solids are recycled helps in improving color stability and in simplifying color change-over.

Dry Process Use

A problem often encountered in the so-called dry process is water fouling by slate particles after flushing of the rolled sheets. A centrifuge can be used for removing such particles in concentrated form. This permits reuse of water and eliminates disposal problems.

(The A-24 centrifuge used in the process is made by Merco Centrifugal Co., affiliate of the Merrill Company, Dept. CP, 150 Green St., San Francisco, Calif. . . . or for more information check CP 3251 on handy form, pages 2 and 3.)

Increase of 25% in production of packaged tablets results with wire stitcher . . .

rehandling of display cards between machines is eliminated

Problem: Miles Laboratories, Inc., of Elkhart, Ind., needed a method to handle the stitching of Alka-Seltzer tablet packages to fiberboard display cards. The original wire stitching procedure was operating satisfactorily until a change in packet dimensions required relocation of the stitches. Adapting the original machine for the revised packet accomplished the desired stitching, but required repeated handling of materials.



Down-time on any one stitcher does not affect the remainder of the assembly line

The need for more economical use of aluminum foil dictated the use of a smaller package. This could be done only by reducing the size of the sealed area forming the edges of each packet. However, a reduction in the size of each packet's

Gates V-Belts are built with **CONCAVE SIDES**




(U.S. PATENT NO. 1813698)


**...that's why
they last longer!**


If you want lower V-Belt costs, just make this simple test...pick up *any* V-Belt and bend it as if it were going around a pulley.



As the belt bends, grip its sides between your fingers and thumb.

If the belt has *straight sides*  you feel the sides bulge out.  This forces the sides of the belt to press *unevenly* against the V-pulley . . .  and you get concentrated wear at the points shown by the arrows.

Now, try this same test with the V-Belt that is built with **CONCAVE SIDES**  —the Gates Vulco Rope.

As this belt bends, you can feel the **CONCAVE SIDES** *fill out* and become perfectly straight. 

These sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the full width of the Gates Vulco Rope and the **CONCAVE SIDES** therefore mean longer belt life and lower V-Belt costs for you.

When you buy V-Belts, be sure to get the V-Belt with the **CONCAVE SIDES**—the Gates Vulco Rope!

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

CS-935

V-Belts — Hose
Molded Rubber Goods
for Industry
World's Largest Maker
of V-Belts

Gates **VULCO ROPE** **DRIVES**
THE GATES RUBBER COMPANY • DENVER, U.S.A.

When inquiring check CP 3250 on handy form, pgs. 2-3

sealed upper edge increased the possibility of a stitch puncturing the air-tight tablet compartment during the packet-to-packet operation. To avoid compartment puncture, it was decided to relocate the stitches.

The new stitching positioning required placing two horizontal stitches at the top of each packet — one in each corner — with only one leg of each stitch passing through the .011" thick aluminum foil. Adapting the original machines for the new positioning made them capable of placing four stitches simultaneously. These four stitches secured two packets, one in each of two rows.

Resulting assembly line required three machines and a conveyor belt to process two display cards. The first machine stitched center-row packets on two separate cards which the operator then placed on the conveyor belt leading to the other two machines. Each of the other two machine operators took one of the cards from the conveyor, placed a single card in a machine, and proceeded to secure packets in the card's two outer rows. Thus, three interdependent machines, each requiring an operator, processed two complete display cards of 24 tablets each.

This system had two drawbacks. The handling and rehandling of display cards between the first machine and the other two was not desirable. Also, down-time for wire spool replacement or preventive maintenance on any one machine could impair the output of the assembly line.

Solution: A quadruple-head wire stitcher was developed which holds two display cards at one time and automatically indexes to the next packet position after each set of four stitches is clinched. When one row of packets is finished, the operator depresses a foot pedal and causes the entire carriage bed to index to the next packet row. Thus one operator at one machine can stitch all three rows of packets to two display cards in one continuous operation. All of the machines in the packaging line have been replaced with this independent type.

Results: A 25% increase in production has already been experienced. With more operator experience, the company expects a further increase in efficiency. Rehandling of cards between machines has been eliminated. Since the machines are independent, down-time on any one unit will not affect the remainder of the assembly line.

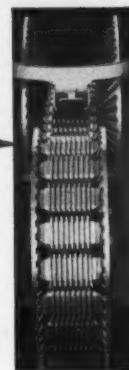
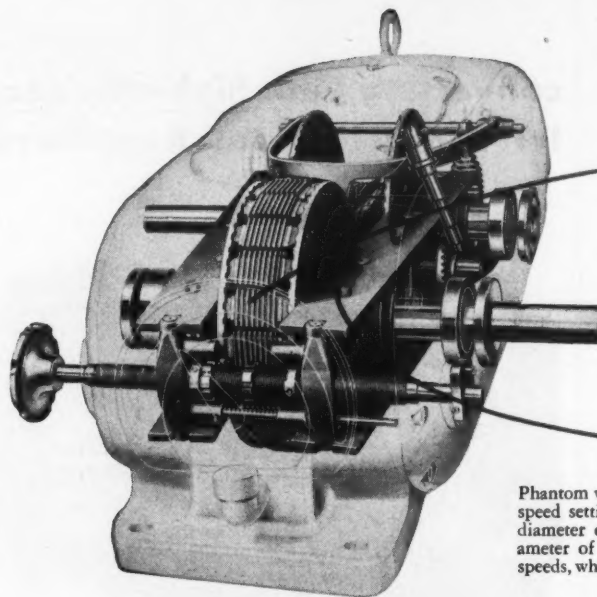
(Additional information about wire stitcher may be obtained from Acme Steel Co., Dept. CP, 2840 Archer Ave., Chicago 8, Ill. . . or check CP 3252 on handy form, pages 2 and 3.)

A company name and address . . .

at the end of each editorial article makes it easy for you to follow-up on process-improving ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

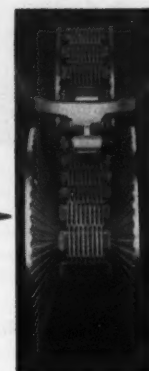
THE EDITORS

How you can get speed changing that's truly POSITIVE truly STEPLESS



ALL INDUSTRY
USES P.I.V.*

*Positive, infinitely
variable



Phantom view of P.I.V. shows maximum speed setting. Chain engages maximum diameter of input wheel, minimum diameter of output wheel. For minimum speeds, wheel settings are reversed (right).

LINK-BELT's P.I.V. operates independent of friction ... gives you exact selection of an infinite number of speeds

TURN a hand wheel . . . push a button . . . or utilize fully-automatic controls. Link-Belt's P.I.V. Variable Speed Drive provides the speed you need—without stopping the machine. Speed changing is positive, stepless—accurate under full load. Speed choice is infinitely selective, effortless and precise.

P.I.V. is not dependent on friction for power transmission. Link-Belt's exclusive self-tooth-forming chain meshes with grooved wheels to assure positive power transmission at all speeds. Full-rated horsepower is constantly delivered to your machines.

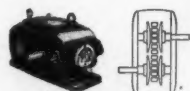
If your manufacturing processes demand vari-

able speed control, get all the facts about these compact P.I.V. Variable Speed Drives. There's an experienced power transmission engineer in the Link-Belt office near you. Call him today. Send for Catalog No. 2274.

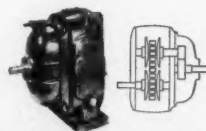
LINK-BELT
P.I.V. VARIABLE SPEED DRIVE

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices: Factory Branch Stores and Distributors in Principal Cities. 12,117

4 of 16 P.I.V. types you can choose from. 1/2 to 25 hp . . . ratios to 6:1



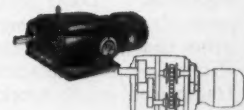
Basic P.I.V. Like all others, it is built for horizontal or vertical mounting.



P.I.V. with single reduction input or output helical gears.



Motorized P.I.V. with single reduction input and output helical gears.



Motorized P.I.V. with single reduction input and double reduction output helical gears.

When inquiring check CP 3253 on handy form, pgs. 2-3

**Recovered chrome dust
pays for collector
in 2 years . . .**

plant doesn't need cleaning as often, but workers are more efficient in improved conditions

Not only did the installation of a dust collector make working areas and outside atmosphere cleaner for Natural Products Refining Co., Jersey City, N. J., but it recovered enough chrome dust to pay for itself in two years. The collector, high among roof trusses and storage tanks in space otherwise unusable, filters ventilating air from a number of dust-producing



Dust collector at Natural Products discharges material into enclosed conveyor, for reclamation. Vibrators on hoppers prevent packing and caking

operations in the plant, among them being crushing of chrome ore in a Hardinge mill.

A two-compartment collector is used, since continuous filtration of the ventilating air is imperative. The unit operates 15 to 16 hours per day, 5 to 6 days per week. It contains hundreds of square feet of filtering cloth in the form of 5" diameter tubes. Dust-laden air enters lower part of collector and passes up

through the tubes where the dust particles are trapped. Clean air is expelled directly outdoors.

At predetermined intervals, the tubes are cleaned by automatic shaking. One compartment is always in operation, however. Dust is removed from hoppers of collector by an enclosed conveyor, and is returned to the production department.

Added benefits here: increased worker efficiency because of more pleasant conditions, more community good-will, and less need for plant cleaning.

(Dustube collectors are made by American Wheelabrator & Equipment Corp., Dept. CP, Mishawaka, Ind. . . . check CP 3254 on form, pages 2 and 3.)

**Savings of \$6000 per year
reported from use of one
magnetic pulley . . .**

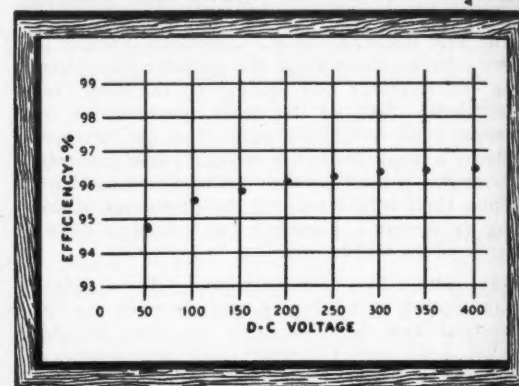
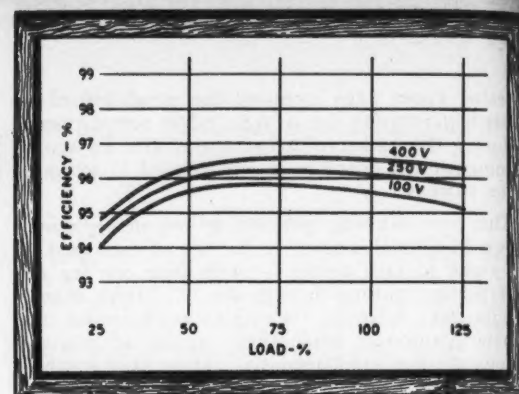
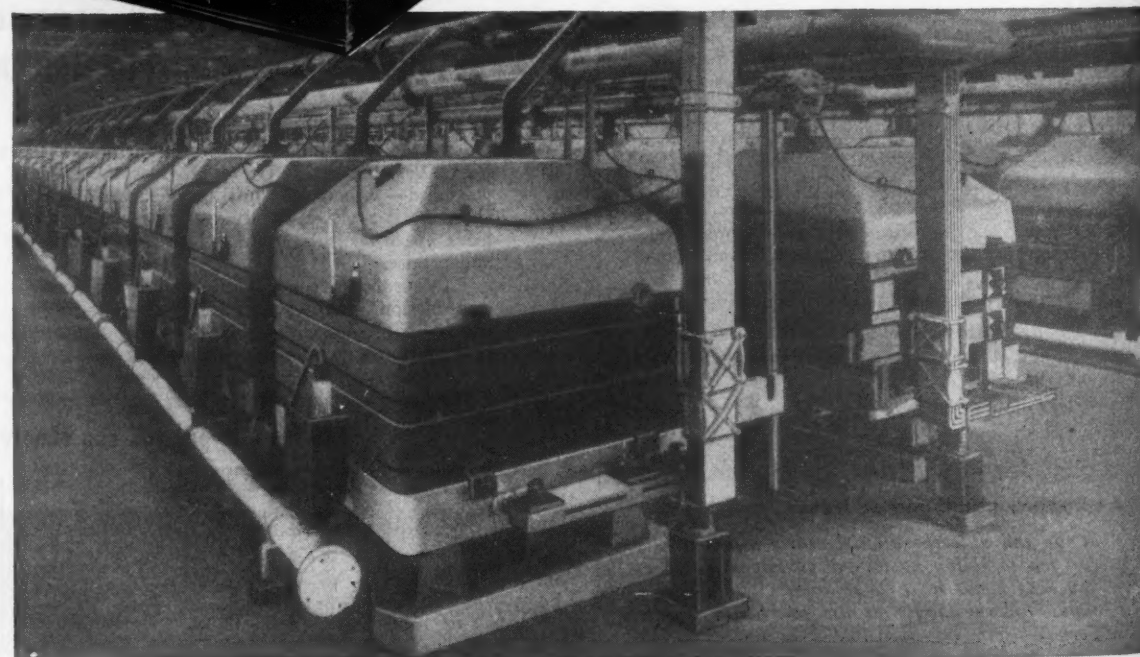
prevents damage to machinery and subsequent shut-downs for repair

Problem: Loose wedges, spikes, wire, and nails were damaging the sigma agitating and mixing arms and bowl of a 350-gal mixer at Kalamazoo Paper Company's plant in Kalamazoo, Mich. This tramp iron meant breakdowns and down-time.

Solution: A 12 x 24" non-electric magnetic pulley, installed in the color room clay-conveyor paper coating mill, simply and efficiently prevents the tramp iron from getting into the mixer. As

Get more DC from the AC you buy

converting with high-efficiency
I-T-E Mechanical Rectifiers



On cell lines like this—

or for heavy motor loads, metal refining, and other heavy current-using processes.

How much are you paying for lost power?

A substantial amount, probably, if you're converting AC to DC at low efficiency.

The two I-T-E Mechanical Rectifier efficiency curves, left, suggest substantial savings on power costs. 94% to 96% conversion efficiency is realized at any operating voltage, whether it's 50 volts or 400 volts. This same high efficiency is maintained from 25% to 125% of rated load current. And that's over-all efficiency—from a-c line to d-c bus.

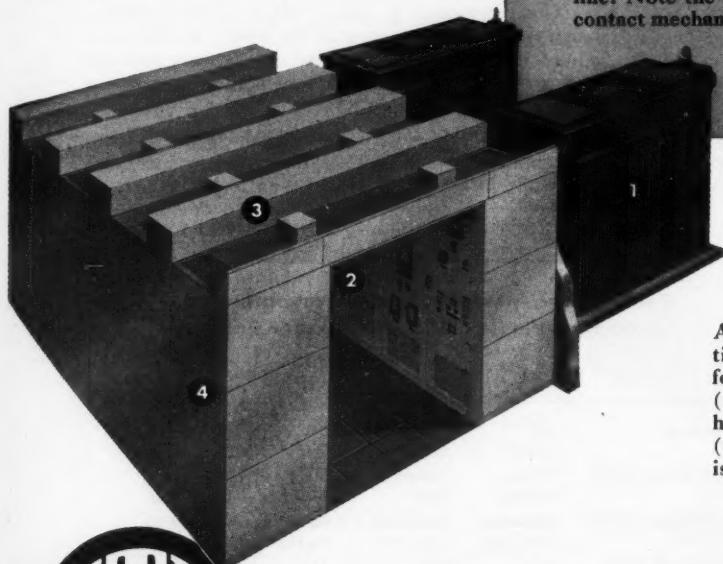
In short, by converting with high-efficiency I-T-E Mechanical Rectifiers, plants can get up to 96 kwhr of direct current power for every 100 kwhr of alternating current they buy

Increased efficiency means increased savings

For example: assume a 10,000 kw load, a power rate of ½ cent per kwhr, and continuous operation at 250 volts d-c. Then, for each 1% improvement in efficiency, yearly savings amount to \$3200 or more!

High efficiency of the I-T-E Mechanical Rectifier (and resulting savings) are substantiated by thirty-seven units in service—more than 200,000 amperes of connected load.

For details, send for Bulletin 5205 or your nearby I-T-E Application Engineer.



A complete I-T-E Mechanical Rectifier installation includes: transformer and commutating reactor (1), contact mechanism (2), overhead bus (3), and d-c switchgear (4). Compact auxiliary equipment is built into compartments.



10,000 ampere I-T-E Mechanical Rectifier supplying direct current to electrolytic chlorine cell line. Note the neat, compact arrangement of the contact mechanism (A) and the control panel (B).



MECHANICAL RECTIFIERS

I-T-E CIRCUIT BREAKER CO. • RECTIFIER DIVISION • 19TH AND HAMILTON STS. • PHILADELPHIA 30, PA.

EPD—CANADIAN MFG. AND SALES: EASTERN POWER DEVICES, LTD., TORONTO

When inquiring check CP 3255 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

material reaches pulley, a powerful magnetic field attracts and holds the iron to belt. As belt passes around pulley, non-magnetic material falls free while ferrous pieces remain fast until carried out of magnetic field of pulley where they drop into a waste container.

Results: Installation of the pulley has saved the company \$1000 per year by eliminating shut-



Non-magnetic material falls free while ferrous particles remain fast until carried out of magnetic field where they drop into a waste container

downs, and \$5000 per year by preventing machinery damage. Other savings accrue, of course, from prevention of product contamination.

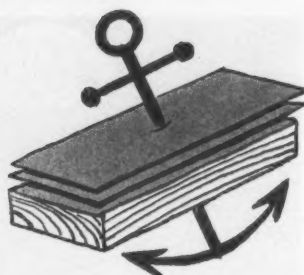
(Non-electric magnetic pulleys are products of Eriez Mfg. Co., Dept CP, Erie, Pa. . . . check CP 3256 on handy form, pages 2 and 3.)

Consulting chemists and engineers offer variety of services

Services in fields ranging from abrasives to zinc rolling are offered by members of an association of consulting chemists and chemical engineers. Over 175 different items of activity of various members are listed in informative brochure.

Preceded by a section which outlines the proper method for finding the right consultant, handy classification section of booklet indexes members of association according to fields of activity. References are given to subsequent section which outlines exact scope of activities for each member as well as giving qualifications of firm. Convenient index is organized in two ways: (a) alphabetically by members, including names of organizations with which they are affiliated; and (b) by geographical location, including branch offices, domestic as well as foreign.

"Consulting Services, 1953," 14th ed, is issued on letterhead request to Association of Consulting Chemists and Chemical Engineers, Inc., Dept. CP, 50 E. 41st St., New York 17, N. Y.



VINYL Coatings Not Lifted by Subsequent Top Coats

Vinyl copolymer resin completely soluble in aromatic hydrocarbons undergoes increase in molecular weight on drying, rendering it insoluble in same aromatics

Table I
Specifications and Film Properties of Vinalak Solution No. 300

Specifications	Film Properties
Type Vinyl Copolymer	Color Retention Excellent
Non-Volatile 44-46%	Initial Gloss (Air-Dried) Good
Volatile Xylol	Initial Gloss (Baked) Good
Viscosity (Gardner-Holdt) U-X	Gloss Retention:
Color (Gardner-1933) 2 Max.	Air-Dried Excellent
Acid No. 3-5	Baked Excellent
Sp. Gr. Solution 0.968-0.982	Resistance to:
Lbs./Gal. Solution 8.05-8.20	Abrasion (Air-Dried) Excellent
Lbs./Gal. Non-Volatile	Abrasion (Baked) Excellent
(Calculated) 9.60-9.72	Acids (Air-Dried) Excellent
Phthalic Anhydride	Acids (Baked) Excellent
(A.S.T.M. Des. 563-45T)	Alkali (Air-Dried) Excellent
Minimum on Non-Volatile None	Alkali (Baked) Excellent
Type of Oil None	Oil & Grease (Air-Dried) Good
% Oil on Non-Volatile	Oil & Grease (Baked) Excellent
(Calculated) None	Water (Air-Dried) Excellent
Mineral Spirits Tolerance None	Water (Baked) Excellent
Rosin and/or Derivatives Absent	Weather (Air-Dried) Excellent
Phenolic Resin Modifiers Absent	Weather (Baked) Excellent
Suggested Thinner Proportions:	Air-Drying Time at 77°F.:
Coal Tar 100%	Dust Free 10 Min.
Compatibility with:	Tack Free 2 Hrs.
Pigment Fair	Hard 2-4 Hrs.
Nitrocellulos Excellent	Baking Schedules:
Miscibility with:	Force dry not over 125°F.
Drying Oils None	
Varnishes None	

BEING introduced to the paint industry as the first vinyl copolymer resin completely soluble in aromatic hydrocarbons is Vinalak 300. Outstanding advantage is relatively low viscosity at high solids in a vinyl type resin. Good resistance to alkalis, water, acids, abrasion, and weathering stem from the vinyl nature of the resin. Resistance to alkali can be utilized in formulation of paints and enamels for concrete, brick, stucco, and plastered surfaces. Specifications are shown in Table I.

As compared with synthetic rubber vehicles, Vinalak 300 has shown the following two important advantages: 1) Its increase in molecular weight on drying results in a product which is no longer soluble in

Table II
Comparative Weathering of Formulations
Containing Vinalak 300 and Rubber Base

	Vinalak 300		Rubber-Base	
Time Exposed	600 hours	1170 hours	600 hours	1170 hours
Color Change (chalk film)	fading, medium	fading, bad	bleaching, very bad	bleaching, very bad
Color Change (chalk removed)	darkening, very bad	darkening, very bad	darkening, medium	darkening, medium
Dulling (chalk film)	53°	47°	27°	13°
Dulling (chalk removed)	71°	68°	79°	71°
Rusting, Blistering	good	good	good	good
Checking, Cracking	good	good	good	good
Chalking	very slight	very slight	bad	bad

aromatic hydrocarbons. This factor produces paints which minimize lifting by subsequent coats and improves resistance to gasoline. 2) High gloss paints can be obtained by grinding in conventional paint equipment. It is not necessary to use special dispersion equipment or dispersed chips.

Numerous formulations of paints for cement floors have been prepared with Vinalak 300 and evaluated in the laboratory. These formulations when cast 3 mils thick (wet) on plate glass were set to touch in 10 minutes, and tack-free in 2 hours. Although the formulations had an average viscosity of 73-74 Krebs Units, they could be reduced to 60-65 K.U. by addition of Hi-Flash naphtha.

Compared in identical laboratory tests with conventional rubber base enamels, the Vinalak 300 formulations showed better alkali, gasoline, abrasion, and weather resistance. Gloss and print and water resistance were found to be equal.

Alkali resistance was determined after 72 hours' drying as follows: 0.7 cc of 2% sodium hydroxide solution was placed in a 1" diameter circle on the 3-mil cast films. Very slight whitening and very slight loss of adhesion was noticed in the Vinalak 300 films after 7 hours. Complete recovery was obtained overnight, however, after removal of the caustic. Rubber base films showed slight blistering and loss of gloss after 7 hours' exposure; overnight a slight loss of gloss was still evident.

Abrasion resistance was run on the Taber Abraser. Films were applied by brush to a dry film thickness of 1.2-1.8 mils and air-dried eleven days. Actual loss in grams averaged 0.0141 for Vinalak 300 films, and 0.282 for rubber base films.

Comparative weathering was tested by exposing painted steel panels in an Atlas Twin Arc Weather-Ometer. Typical results are shown in Table II.

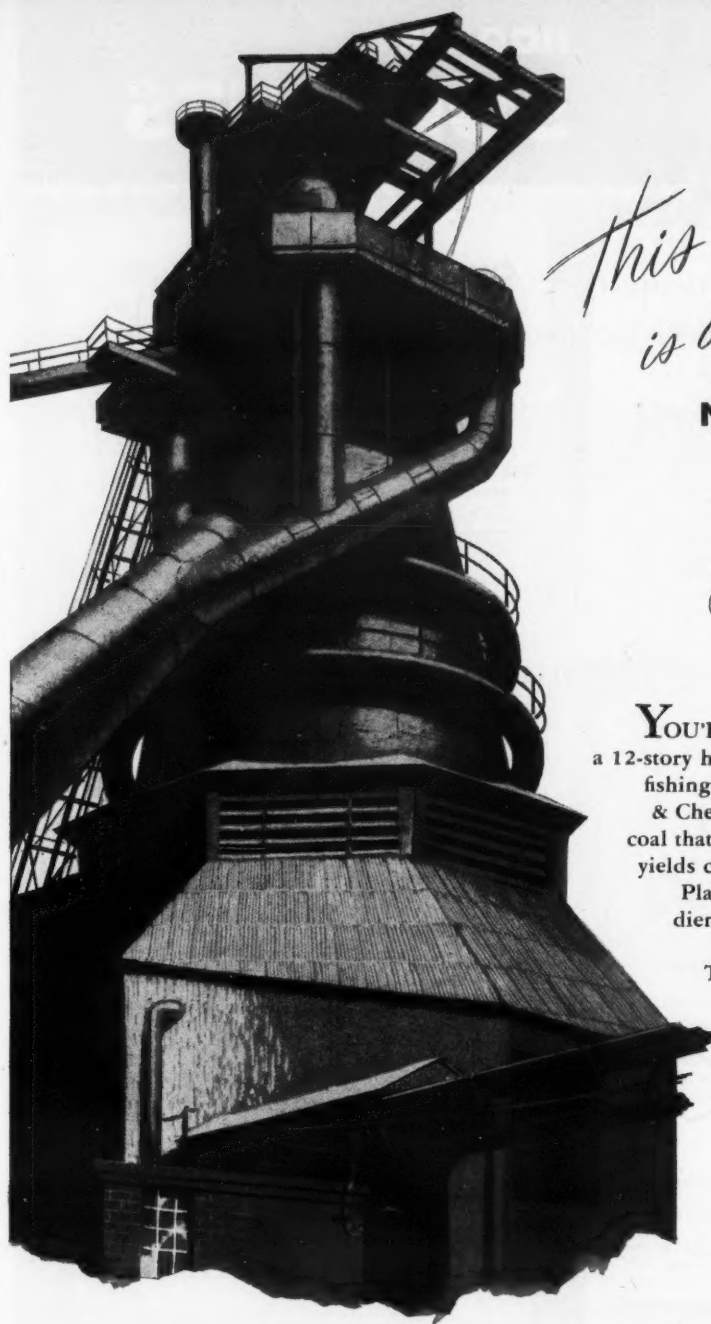
In testing for **gasoline resistance**, films were cast 3 mils thick (wet) on plate glass and allowed to dry for seven days. At the end of this time, 0.1 cc of gasoline was placed on the films and allowed to evaporate. Vinalak 300 films showed absolutely no effect, while the rubber base enamels became soft and tacky with evidence of blistering.

A specially formulated white brick, stucco, and asbestos paint based on Vinalak was used to paint both stucco and asbestos shingles of an industrial establishment four years ago. There has been no evidence of failure of the coating, and the surfaces have remained clean and white throughout the entire exposure period. No checking, cracking, or loss of adhesion is visible.

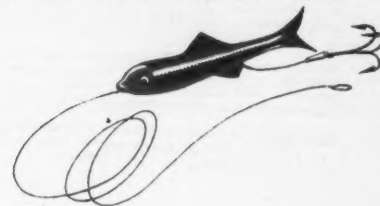
Suggested Formulation Guide

- 1) Aromatic solvents must be used as Vinalak will not tolerate low solvency thinners.
- 2) Non-chalking titanium dioxide is recommended pigment. White lead or zinc oxide should not be used as they cause gelling.
- 3) For pigmenting and tinting, alkali-resistant pigments such as phthalocyanine blue or green, chromium oxide, or iron oxide should be used.

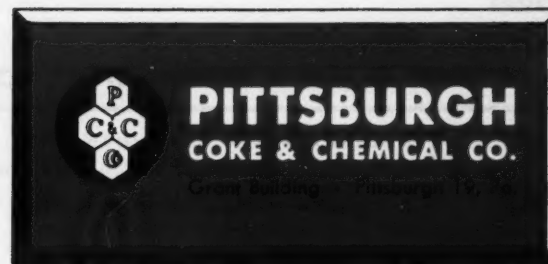
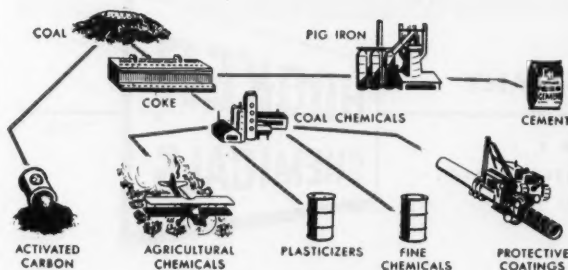
(Continued on page 27)



This Lady
is a first cousin
to your
New Fishing Lure



YOU'D never expect to spot a kinship between a 12-story high blast furnace and a half-ounce plastic fishing lure, would you? But at Pittsburgh Coke & Chemical, the family tie is *basic*. For the very coal that produces coke for Neville Pig Iron also yields coal chemicals for making Pittsburgh PX Plasticizers, the important "flexibility ingredients" in fishing lures and a thousand other useful plastic products in your daily life. Today, in our 25th Anniversary Year, the products of the company's ten divisions are as diverse as cement and dyestuffs. Yet the production of every division is knit together, at a single plant site, in one continuous, interlocking pattern. This highly developed integration—almost without parallel in modern industry—provides distinct benefits to our customers: Assured product quality and dependable, continuing supplies . . . because Pittsburgh is *basic*.



When inquiring check CP 3257 on handy form, pgs. 2-3

Hooker Chemical Guide (ONE OF A SERIES)

USE this handy reference to save time
in selecting high-quality chemicals.

MONOCHLOROBENZENE

Synonym: Phenyl Chloride
Formula: C_6H_5Cl
Molecular Weight: 112.5
Appearance: Clear, colorless liquid



TYPICAL PROPERTIES

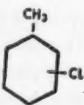
Freezing Point $-44^\circ C$
Distillation Range 131.2° to $132.2^\circ C$
Specific Gravity, $15.5^\circ/15.5^\circ C$ 1.114

USES

INSECTICIDAL INTERMEDIATE: DDT and other insecticides.
DYESTUFF INTERMEDIATE: Sulfur black and brown dyes.
CHEMICAL INTERMEDIATE: Organic synthesis.
SOLVENT: Paints, varnishes, lacquers, paint removers; general use.
HEAT TRANSFER FLUID: Suggested for condensing vapor systems, such as glass-enameled vessel jackets, which cannot stand high steam pressures.

MONOCHLOROTOLUENE

Synonym: Methylchlorobenzene
Formula: $CH_3C_6H_4Cl$
Molecular Weight: 126.5
Appearance: Clear, colorless to straw-colored liquid.



TYPICAL PROPERTIES

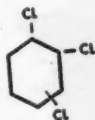
Freezing Point below $-45^\circ C$
Distillation Range 158.3° to $161.7^\circ C$
Specific Gravity, $15.5^\circ/15.5^\circ C$ 1.080

USES

SOLVENT: Rubber and synthetic resins.
INTERMEDIATE: Manufacture of rubber accelerators, chemicals.

TRICHLOROBENZENE, Tech.

Formula: $C_6H_3Cl_3$
Molecular Weight: 181.5
Appearance: Clear, almost colorless liquid



TYPICAL PROPERTIES

Freezing Point $10^\circ C$
Distillation Range 5° incl. $216^\circ C$
Specific Gravity, $15.5^\circ/15.5^\circ C$ 1.466

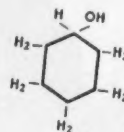
USES

INSECTICIDE: Soil poison for termites.
SOLVENT: Fats, oils, waxes, resins; crystallization solvent.
HEAT TRANSFER MEDIUM: Condensing vapor systems, 210° to $300^\circ C$.
DIELECTRIC FLUID: Transformers.
INTERMEDIATE: Dye intermediates, other organic chemicals.

HOOKER SOLVENTS

CYCLOHEXANOL

Synonym: Hexahydrophenol
Formula: $C_6H_{11}OH$
Molecular Weight: 100.1
Appearance: Viscous, colorless liquid with pleasant, aromatic odor.



TYPICAL PROPERTIES

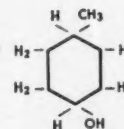
Freezing Range High Grade
Boiling Point 16° to $22^\circ C$
Specific Gravity, $25^\circ/15.5^\circ C$ $161.7^\circ C$
Flash Point 0.945
Tech. Grade
 $-10^\circ C$ to $-20^\circ C$
 $161.7^\circ C$
 0.939
 $61^\circ C$

USES

SOLVENT: For resins, metallic soaps, dyes, fats and oils.
BLENDING AND STABILIZING AGENT: In textile soaps and dry cleaning agents.
HOMOGENIZING AGENT: For lacquers, varnishes and paints.
ALSO USED: In furniture and metal polishes, shoe creams, floor waxes, degreasing of leather, lubricating oils, also a plasticizer and ingredient of adhesives, and as a chemical intermediate in organic synthesis.

METHYL CYCLOHEXANOL

Synonym: Hexahydrocresol
Formula: $CH_3C_6H_{10}OH$
Molecular Weight: 114.1
Appearance: Light straw-colored, neutral, viscous liquid.



TYPICAL PROPERTIES

Distillation Range 155° to $180^\circ C$
Specific Gravity, $15.5^\circ/15.5^\circ C$ 0.924
Flash and Fire Points $71^\circ C$

USES

SOLVENT: For cellulose acetate, nitrocellulose and other cellulose esters for lacquers and coating compositions.
ANTI-OXIDANT: In lubricants.
BLENDING AGENT: For special textile soaps and detergents.

• For more information on items listed,
drop a note on your letterhead to:

HOOKER ELECTROCHEMICAL COMPANY
15 Forty-Seventh St., Niagara Falls, N. Y.

HOOKER ELECTROCHEMICAL COMPANY

NIAGARA FALLS, N. Y. • NEW YORK, N. Y.
TACOMA, WASH. • CHICAGO, ILL. • LOS ANGELES, CALIF.

From the Salt of the Earth

**HOOKER
CHEMICALS**

2-1520

MATERIALS

"No rewetting powers" told for textile wetting agent . . .

agent also acts as dye leveller and lubricant

Textile finishers should be interested in the announcement of a wetting agent, dye-leveller, and dye bath lubricant that has no rewetting powers. Absence of rewetting action is of paramount importance, of course, when dyed goods are processed with water repellents.

Manufacturer reports that Atolene NR overcomes the handicap that appliers of water repellents have experienced with the rewetting powers of conventional dye assistants, even when carried over in minute traces from the dye bath. Besides being a good wetting agent and dye leveller, Atolene NR adheres to the surface of fibers during dyeing, thus giving them a protective and lubricating film which acts to prevent formation of bruise marks on heavy rayon and acetate fabrics.

When merely wetting and dye levelling are required, 1-2% of the agent on the weight of the goods is suggested. When lubrication is required, 2-3% on the weight of the goods should be used. This percentage may be increased slightly in the case of exceptionally heavy fabrics.

(Atolene NR is a development of the Dexter Chemical Corporation, 819 Edgewater Road, New York 59, New York . . . or for more information check CP 3259 on handy form, pages 2 and 3.)

Stabilizes vinyl resins, imparts antistatic properties . . .

properly formulated vinyls are said to be tough, show reduced brittleness

Uses: Series of stabilizers possessing antistatic effectiveness for various types of vinyl resins. Especially recommended for application with inexpensive, alkylated aromatic plasticizers that would ordinarily darken the vinyls on exposure to ultra-violet light.

Features: All members of series are non-toxic, non-flammable, non-irritating to the skin, and non-corrosive to plastics processing equipment. They are compatible with vinyl resins within amounts required for stabilization, and compatible with conventional commercial plasticizers. Properly formulated vinyls are said to be tough and show less brittleness.

Stabilizers will not affect color, pigments, and fillers, nor will they bleed or migrate to the surface of vinyls. Vinyl milling temperature and time are said to be reduced.

Description: Duranyls A, D, and M for stabilizing vinyls are used in amounts depending entirely on the temperature at which the molding compound is heated and time of exposure. The higher the temperature and the longer the time of exposure, the more Duranyl is required. If the temperature of the milling and molding does not exceed $155^\circ C$, and the total time at which the

When inquiring check CP 3258 on handy form, pgs. 2-3

plastic is exposed to that temperature is not longer than 15 minutes, 1½-2% of Duranyl can be applied.

If the temperature or time of exposure, or both, are higher, percentages from 2-3% should be used and verified by test. By incorporating a large amount of plasticizer, milling and molding temperatures usually are much lower and the time of exposure can be shorter — in this case 1-1½% Duranyl is suggested.

The stabilization action, in addition to taking place during milling and molding, also is said to permanently protect against discoloration and further polymerization.

Percentages from 3 to 6% Duranyl are required to effect antistatic properties in vinyls — depending on the molecular weight of the resin, milling temperature, time of exposure, and amount of plasticizer and filler. Best antistatic properties are obtained if the molding material is blended with the Duranyl and plasticizers in proportions that keep the surface bleeding just below the border line. Duranyl should be added at the last moment when antistatic properties are desired.

Properties of four Duranyls are tabulated below:

Appearance @ 20°C	Duranyls			
	A	B	C	D
	liquid	liquid	soft wax	liquid
Color	very light	dark orange	light yellow	light orange
Specific Gravity @ 20°C	1.145	1.005	—	1.016
Solidifying Point, °C	+10	+16	+32	0
Stabilization, temp limit, °C	175-180	175-180	140	180
Destatization, temp limit, °C	165	not usable	145	165

(Duranyls are products of the Alframine Corporation, Dept. CP, 4731-4661 East 52nd Drive, Los Angeles 22, California . . . or for more information check CP 3260 on handy form, pages 2 and 3.)

Gives complete resume on tar bases

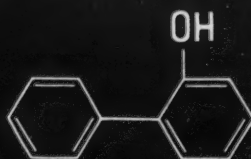
Attractively-done 96-page publication presents a complete run-down on coal-tar bases. Properties, reactions and graphical data are all part of the information given. Over 30 pages are given to a review of uses in various industries, including: pharmaceutical, plastics, cellulose, textile, dye, petroleum and pesticide. Typical reactions are given graphically and show: halogenation, nitration, oxidation, hydrogenation, sulfonation, amination, alkylation, arylation and condensation.

Other descriptive material takes in hazards, methods of handling, test methods, and bibliographical abstracts. "Tar Bases" is issued by Allied Chemical & Dye Corp., Barrett Division, Dept. CP, 40 Rector St., New York 6, N. Y. When inquiring specify CP 3261 on handy Reader Service slip, pages two and three.

NEW ANTIMICROBIAL AGENT OF HIGH PURITY NOW AVAILABLE

o-PHENYLPHENOL, PURIFIED, an improved preservative of good color stability, a low order of taste, toxicity and odor

o-PHENYLPHENOL, PURIFIED, CHEMICAL AND PHYSICAL PROPERTIES



Chemical Name *o*-Phenylphenol
Molecular Weight 170.2
Description Small, white, free-flowing flakes with a slight bland odor and taste.
Boiling Point at 760 mm. Hg 286.0°C.
Freezing Point 57.2°C.
Specific Gravity 1.217 at 25/25°C., 1.213 at 25/4°C.
Flash Point 255°F.
Fire Point 300°F.

Solubility (approximate) at 25°C.	(Grams per 100 Grams of Solvent)
Acetone	670
Dowanol * 338	412
Dowanol * 508	381
Dowanol * 628	304
Dowanol * 9382	382
Ethyl Alcohol (Formula 30)	590
Ethylene Glycol	234
Isopropyl Alcohol	587
Methanol	975
Neats Foot Oil	22
Olive Oil	50
Petrolatum (White)	8 at 50°C.
Pine Oil	257
Polyglycol P400	176
Polyglycol P750	149
Propylene Glycol	316
Stoddard Solvent	12
Water	Less than 0.1

The Dow Chemical Company
Dept. DP 3-35, Midland, Michigan

Please send me an experimental sample of *o*-Phenylphenol, Purified.

Name _____

Title _____

Company _____

Address _____

City _____ State _____

This new, *purified* grade of *o*-Phenylphenol will be of special interest to formulators requiring an antimicrobial agent of low odor and taste and good color stability.

These highly desirable properties combined with a low order of toxicity make this new antimicrobial agent well suited for formulations in the cosmetic, pharmaceutical and related industries.

o-Phenylphenol, Purified, is available in experimental or limited commercial quantities. Write to THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on **DOW CHEMICALS**



When inquiring check 3262 on handy form, pgs. 2-3

Where can **YOU** use
a wearproofing metal
with these qualities



PHYSICAL PROPERTIES OF CARBOLOY® CHROME CARBIDE

High hardness	Low magnetic permeability
Corrosion resistance	Wear resistance
Steam erosion resistance	Low electrical conductivity
Oxidation resistance	Metallic lustre
Heat resistance	Low density (compared to tungsten carbides)

NEW CARBOLOY® CHROME CARBIDE

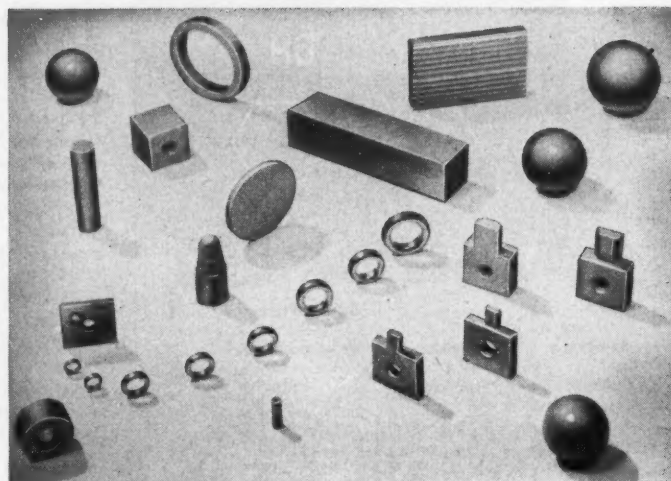
guards parts from corrosion, abrasion, erosion

If valves, spray nozzles, pump seal rings or other equipment parts wear out rapidly from corrosion or erosion, we suggest that you try wearproofing them with Carboloy Chrome Carbide.

Grade 608 Chrome Carbide (not a cutting metal) is the first in a new Carboloy series of metallic carbides designed to lengthen equipment life where acids, alkalis, heat, oxidation and the like are most troublesome.

Its lightweight and nonmagnetic features offer possibilities for use in bearing applications in electronic and magnetic equipment. Because Grade 608 retains most of its properties at high temperatures due to its extreme acidation resistance, it is considered well suited for orifices for application on equipment exposed to extreme temperatures brought about by the processing of gases, liquids and metals.

Chrome Carbide seems to offer outstanding possibilities in the applications listed below. Send coupon for technical bulletin CC-100.



TYPICAL SHAPES made of Carboloy Grade 608 Chrome Carbide now being produced for industry.

SUGGESTED APPLICATIONS for Grade 608 Chrome Carbide

Valve trim, centrifuge nozzles
Pump seal rings
Bearings and bushings
Food and chemical processing equipment
Shear blades for molten glass
Core pins for ceramic baking
Textile guides, and many other parts
where corrosion, abrasion and erosion must be resisted

CARBOLOY
DEPARTMENT OF GENERAL ELECTRIC COMPANY

"Carboloy" is the trademark for the products of the Carboloy Department of General Electric Company

GET A "TRY-IT-YOURSELF" CHROME CARBIDE KIT

Test Chrome Carbide yourself! Kit includes: 3 bars $\frac{1}{4}$ " sq. x 2"; 2 bars $\frac{1}{2}$ " sq. x 1"; 3 bushings $\frac{5}{16}$ " I.D.; 1 rod $\frac{1}{8}$ " dia. x 1" long. Price of kit is \$10.75 (subject to applicable sales and use taxes). Kit is adequate for conducting a wide variety of tests in your laboratory.



Carboloy Department of General Electric Company
11159 E. 8 Mile Road, Detroit 32, Michigan

- ☐ Send me Chrome Carbide Technical Report CC-100 free of charge.
☐ Send me "Try-It-Yourself Kits" of Chrome Carbide at \$10.75 each (subject to applicable sales and use taxes).
Enclosed is: ☐ Check ☐ Money Order ☐ Purchase Order

Name _____ Position _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 3263 on handy form, pgs. 2-3

MATERIALS

Forms waterproof bonds between wood-wood, plastics-plastics and plastics-wood

Uses: Thermosetting, self-curing cement for bonding wood and plastics to themselves and to one another. Specific examples include lamination of oak and other woods for boat hulls, bonding phenolic and urea plastic sheets (Formica, Micarta, etc.), bonding Nylon to Nylon without heat or pressure, cementing Lucite and Plexiglas to wood, and many more.

Features: Offers a high strength bond that will not dry out or lose strength on aging. Exhibits good resistance to heat, salt and fresh water, fungus, many acids, solvents, and lubricating oils. It is neutral when cured and will not decay cellulose fibers.

Description: CD Cement #300 is intended for conformance with Military Specifications MIL A5433, A5434, A397A, and AXS 1665.

(Product of the Chemical Development Corporation, Dept. CP Danvers, Massachusetts . . . or to secure more information reader may simply check CP 3264 on convenient Reader Service slip between pages two and three.

Sodium salt of epoxystearic acid more stable than acid itself . . .

in turn, more suitable as source of acid which is used to make esters, amides and metal salts

Uses: Material should be of interest as an additive for oils and greases and as a corrosion inhibitor in aqueous systems operating at low temperatures on the alkaline side. It is also suggested in detergent and softening compositions because of its surface active properties, and in cosmetic specialties.

Chief use is as source of epoxystearic acid in making salts, esters, amides and other derivatives of 9, 10-dihydroxystearic acid. Some uses of this type are cited below:

Salts: Metal salts of epoxystearic acid are of interest as oil and grease additives; stabilizing agents for polyvinyl chloride and other halogenated products, including chlorinated paraffin; and drying catalysts for paints and inks.

Plastics and Resins: Epoxystearic acid is of interest in modifying alkyd resins.

Textile Specialties: Acid is suggested in the synthesis of products useful as finishing aids, permanent water repellents, softeners and other textile auxiliaries. Reaction products of epoxystearic acid with amines, alkanolamines and ethylene oxide are especially interesting.

Features: Sodium epoxystearate is a more stable product than epoxystearic acid and is, therefore, more suitable as a source of this product for the preparation of derivatives than the free acid itself. The salt has been shown to be stable at room conditions for at least five months, whereas the free

U.S.I. CHEMICAL NEWS

★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★

ATTENTION

Users of Taxfree and Specially Denatured Alcohol

New is the time for users of specially denatured alcohol to renew their basic permit (Treasury Department Form 1479) for 1954. It is also time for users of Taxfree alcohol to complete and file with the Assistant District Commissioner — Alcohol and Tobacco Tax Unit — their application (Form 1450) for renewal of their Taxfree Alcohol permit for 1954. If you require forms or any assistance in their preparation, please call your nearest U.S.I. office.

New Skylight Panels Let Winter Light In, Keep Summer Sun Out

An unusual way of automatically varying transmitted solar light and heat with the season of the year has been revealed in a new glass panel for flat skylights. Each panel unit is a hermetically sealed hollow glass box, evacuated for insulating purposes. Prisms on the inside of the top glass govern the amount of daylight and solar heat transmitted, depending on the position of the sun. The bottom piece has an uneven surface to diffuse the entering light and distribute it evenly to the area below. Between is a sheet of plastic material to soften the light and augment the vacuum insulation.

When installed so that the panels are oriented within 30 degrees of the geographic north-south axis, the skylight transmits light from the north half of the sky and from the lower part of the southern sky — which is desirable in winter when the sun is low. Prism design on the underside of the top glass is such that a large part of direct sunlight coming from the higher southern sector (where the bright summer sun is) is reflected. Thus, as the sun's elevation changes with the seasons, light entry is controlled automatically, with much of the brightness and heat eliminated during summer months, it is said.

Bulletin on Zinc Dust

A bulletin describing various applications of zinc dust was issued recently. The publication gives details on the use of zinc dust in the manufacture of paints and bleaches, as a reducing agent, catalyst, purifier, precipitating agent, and as an additive to grease and other materials for pipe thread lubrication.

Zinc dust is said to be a natural enemy of rust and to be highly effective on iron and steel in salt atmospheres and where the painted surface is in contact with brine. Special zinc dust paints can be made to provide unusual durability when used on flue boxes, steam condensers, and other industrial equipment subject to high temperatures.

Methionine Ups Feed Efficiency; Helps Poultry Feathering, Growth

New Laboratory and Field Research Confirms Improvements
Obtained by Adding Methionine to Broiler and Turkey
Starter Feeds; Benefits Pronounced in Hot Weather

As a result of U.S.I.'s pioneering research, the world has seen methionine transformed in the short space of seven years from a chemical rarity to a practical commodity which is used in tonnage quantities. Until U.S.I. developed its commercial method of synthesis in 1946, methionine was a scarce organic chemical selling for several hundred dollars per pound. When it became available in quantity, the pharmaceutical industry soon uncovered many new therapeutic uses, and its success in this field spurred the use of methionine in other applications.

One of these has been in the manufactured feed industry. Methionine has long been known as an essential sulfur amino acid, necessary for the growth and repair of animal tissue. A great amount of experimental work has been carried out to demonstrate that methionine improves feed efficiency and growth. Its addition as a supplement to animal feeds has been found to be profitable and practical. As a result, methionine is now used by feed manufacturers in every section of the country.

Poultry Among Chief Benefactors

Poultry are among those farm animals that benefit most from additions of methionine to their feed. Recent poultry research reported from a leading university gives added confirmation to the fact that methionine can increase profits in several ways. This

MORE

'3-D' Models of Crystals Easily Built with New Kit

A simple and effective means for visualizing how atoms, molecules, or ions pack together to form various crystalline structures is now available in a new demonstration model kit. Portable and easy to use, the kit consists of a series of transparent plates containing regularly spaced holes into which black or white spheres are placed to represent units within the crystal. Spaces and supporting rods separate the plates and hold the structure rigid. By arrangement of alternate layers and the use of different length spacers, any of the fourteen possible space lattices in the six crystallographic systems can be shown clearly in three dimensional form. Once put together, the crystal model has a slightly exploded appearance, showing the relation of the cleavage and glide planes to the lattice structure, the manufacturer points out.



Feathering can be greatly improved by the addition of methionine to the broiler ration, as this photograph from Broiler Growing shows. The bird on the left came from a group fed one pound of methionine per ton of feed. The bird on the right received no methionine.

U.S.I. CHEMICAL NEWS

CONTINUED

Methionine

work also reveals that methionine can be used to overcome poor feathering—a common hot weather problem encountered by many poultry growers.

On the basis of several years of tests involving more than 10,000 chicks, it is estimated that from one-half to one pound of methionine, added to each ton of feed, yields the broiler producer from 15 to 30 pounds of additional broilers per ton of feed used. This estimate takes into account the improvement in feed efficiency alone. Additional benefits in increased growth—larger birds in a shorter time—are also obtained.

Methionine Improves Feathering

Definite improvements in feathering were noted as a result of feeding methionine. In one test under field conditions, feather score was improved approximately 25 per cent during hot summer months in birds receiving methionine at the rate of one pound per ton of feed. In other tests under experimental conditions, it was noted that birds not fed methionine were almost completely barebacked. The addition of one pound of methionine per ton of feed produced normal feathering.

Similar Results Obtained in Turkeys

Extensive experiments in adding methionine to turkey starter feeds gave equally beneficial results. Under practical conditions, the addition of one pound of feed grade methionine to each ton of turkey feed, with and without antibiotics, produce a sizeable increase in growth. It is emphasized in the report of this work that the all-vegetable test ration was fortified with the known vitamins and minerals, and that prior to the addition of methionine, the ration already contained "adequate" methionine on a calculated basis.

It is also interesting to note that the growth response obtained by adding methionine to the ration was greatest during hot weather. This makes it possible to assume that free methionine assists the birds in some way to overcome the stresses and strains brought on by hot weather and other factors.

New Reagent Simplifies Moisture Determinations

A new reagent for detecting and measuring traces of water in various substances was recently announced by a chemical firm. The reagent is applicable for anhydrous solvents, paint thinners, dry-cleaning solvents, plasticizers, higher alcohols, gasoline, petroleum oils and greases, and vegetable oils, fats, and waxes.

No heating is required in the procedure. The reagent is simply added dropwise to a given quantity of sample until a blue-green end point is reached. Using the dropper furnished with the reagent, each drop is equivalent to 0.2 mg. of water.

The same procedure can be used to determine quickly traces of water in organic solids which cannot be heated, provided the solids are soluble in butyl alcohol. The test can also be adapted to other products such as powdered inorganic materials, textiles, and fibers, according to the company. The product is said to be useful for plant and field testing, as well as for laboratory testing.

Rhodium Vacuum Coating Offered as New Service

Vacuum-coating of rhodium on conductive and non-conductive materials is now available as a commercial service to technical laboratories and industrial organizations, according to a recent announcement. Rhodium is said to have a high resistance to chemical attack and because of its high reflectivity, is excellent for mirrors and reflecting surfaces which must withstand corrosive atmospheres. When deposited on glass and subjected to baking, rhodium coatings become extremely hard and are ideal for making thin, hard surfaces to resist wear and friction, it is said. Materials coated thus far include microscope slides, mirrors for optical apparatus, reflectors for telescopes, gauges, and glass bearing surfaces.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

A new plastic bearing material is said to require no lubrication, to contain no oil, graphite, or other sealed-in lubricant, to be extremely resistant to chemical corrosion, and to be able to withstand temperatures ranging from —100 to over 400° F. (No. 950)

A new solvent-resistant coating for paper, leather, rubber, etc., is described as a specially plasticized, room-temperature curing phenolic resin which yields a flexible, non-tacky, glossy film. (No. 951)

To prevent mercury poisoning through skin absorption, a protective cream is available which is said to contain a mercury decontaminant. Cream is claimed to offer protection against coal tar derivatives, dilute acids and alkalis as well. (No. 952)

A new protective chemical for aluminum, applied by brushing or dipping, reportedly forms an amorphous mixed metallic oxide coating that provides unusually high corrosion resistance and forms an excellent paint bond. (No. 953)

Large, heavy-duty paint rollers, fitted with extra-long handles, are claimed to eliminate ladders and scaffolds from industrial painting, and to handle oil, water, or rubber-base paints on all types of surfaces. (No. 954)

Warning labels which can be applied without moistening to glass, metal, wood, plastic, or ceramic containers, are printed on strong, durable cotton cloth coated with silicone, and are available in 36 different wordings, according to the manufacturer. (No. 955)

A new chemical-resistant gasket material consists of strips of foamed silicone rubber wrapped in sheets of tetrafluoroethylene resin and is claimed to be effective in chemical and pharmaceutical applications over a wide temperature range. (No. 956)

A novel new shaving brush fits the end of any standard size tube of shaving cream, dispenses lather directly through the bristles of the brush. (No. 957)

To prevent corrosion in steam condensate systems, a new compound, fed to the boiler in small amounts, vaporizes, depositing a non-wettable protective film in return lines, it is said. (No. 958)

A 'spray-can' water repellent for cloth is claimed to repel water without retarding air circulation, to improve wear and wrinkle and crease resistance, and to be suitable for clothing, sails, car tops, awnings, etc. (No. 959)

PRODUCTS OF U. S. I.

ALCOHOLS

Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)

Specialty Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox®—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro® Anti-Freeze
U.S.I. Permanent Anti-Freeze

ETHERS

Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS

Ansol® M
Ansol® PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS

Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS

Dianyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

Diatol®
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)

Arachem®—modified types
Aroclure®—urea-formaldehyde resins
Aroclene®—pure phenolics
Aroflint®—for special flat finishes
Aroflint®—room temperature curing phenolic
Aroplast®—alkyds and allied materials
Aroplast®—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

Allerthrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyrethron® Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

INSECTIFUGE MATERIALS

Indalone®
Triple-Mix Repellents

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS

Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G®
DL-Methionine (Feed Grade)
Nicotin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay®
U.S.I. Vitamin B₁₂ and Antibiotic Feed Supplements
Vacatone® 40

OTHER PRODUCTS

Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
N-Acetyl DL-Methionine
Nitrocellulose Solns.
Propionaldehyde
Propionic Acid
Sulfuric Acid
Urethan, U.S.P.
*Reg. U.S. Pat. Off.

U.S.I. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation

120 BROADWAY, NEW YORK 5, N. Y.

BRANCHES IN ALL PRINCIPAL CITIES

acid shows definite signs of deterioration under the same conditions in less than one month.

Description: Sodium epoxystearate has the usual chemical properties of fatty acid soaps, plus those of the very reactive oxirane structure such as occur with ethylene oxide. Epoxide group reacts with other chemicals having a reactive hydrogen, such as water, acids, alcohols, ammonia, amines, amides, mercaptans and the like to form the corresponding derivatives of 9, 10-dihydroxystearic acid. The salts of epoxystearic acid can be made, provided conditions are chosen which do not have any effect on the epoxide group.

Product is an off-white powdered material containing a minimum of 90% of the sodium salt of 9, 10-epoxystearic acid. Balance consists of diepoxy stearic acid and stearic acid. Some properties of a typical batch are given below:

Purity, %	90
Water content, %	<2
Melting point, F	210-215 (decomposes)
Iodine number	1.0
Epoxide oxygen content	4.9
Solubility in water, %	>10

(Sodium epoxystearate is available in experimental quantities from W. C. Hardesty Co., Inc., Dept. CP, 41 East 42nd St., New York 17, N. Y. . . . or for more information reader may simply check CP 3265 on convenient Reader Service slip between pages two and three.)

Vinyl Coatings

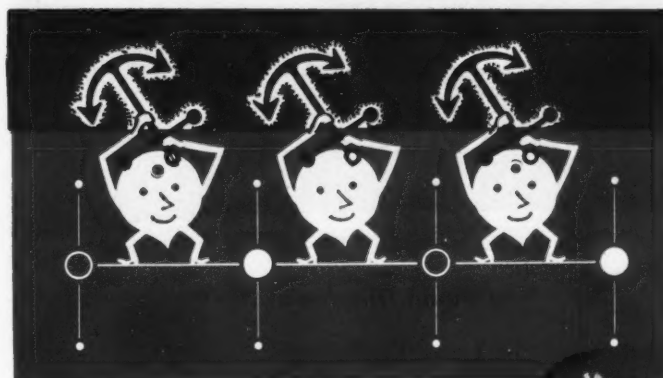
(Continued from page 23)

- 4) Chlorinated diphenyl is used as a plasticiser and the percentage can be varied.
- 5) Chlorinated rubber, is used to reduce the surface tack and is also a help with alkali resistance.
- 6) Chlorinated paraffin plasticizer aids materially in obtaining low viscosity at high solids.
- 7) Suspending agents are required and should be incorporated in the grind.
- 8) For tinting, pastes dispersed in chlorinated rubber may be used. Shading pastes may also be prepared in Vinalak 300.
- 9) Reducers needed for spray application are readily made-up.
- 10) For best results on 2-coat work, the first coat should be allowed an eight hour drying period before the second is applied.

(Vinalak 300 vinyl copolymer resin is a development of Reichhold Chemicals, Incorporated, Dept. CP, 630 Fifth Avenue, New York 20, New York . . . or for more information reader may simply check CP 3266 on convenient Reader Service slip between pages two and three.)

For more information on product at left, specify CP 3267 . . . see information request blank between pages 2 and 3.

when unmodified PVAc (POLYVINYL ACETATE) won't adhere . . .



TRIPLES TENSILE STRENGTH!

Peel Tensile Strength

Regular PVAc72 lbs./sq. in.
National's VA copolymer 14L042.22 lbs./sq. in.

Test run on acetate-foil laminations, with an adhesive coverage of 4 lbs./3000 sq. ft. Both products were formulated and plasticized similarly, with PVAc in 30% solution.

SUGGESTED USES

- Heat-seal and solvent-reactivating coatings
 - Adhesives for transparent sheetings, foils, varnished papers, inked papers, and other difficult surfaces
 - Greaseproof and asphaltproof coatings
 - High-solids emulsions and lacquers
 - Binders for paper, fibers, cork, asbestos, etc.
 - Sizes and binders for textiles and carpets
- . . . or National will tailor-make a vinyl acetate copolymer for your specific use.



try a vinyl acetate COPOLYMER

National COPolymerizes vinyl acetate to give it better adhesive and cohesive properties. The result? Higher specific adhesion to difficult surfaces such as foil, cellulose acetate, varnished papers, inked papers, etc.

National's vinyl acetate copolymers are available in emulsion, solution, or hot melt form. They give you excellent clarity and light stability. Write for technical data.

RESYN®
National
ADHESIVES

270 Madison Avenue, New York 16, N. Y.

I'd like to talk to a National representative about Vinyl Acetate COPolymers.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 3268 on handy form, pgs. 2-3

OUTSTANDING

FEATURES

OF ORONITE'S DRY AND LIQUID SURFACTANTS

Better D-40—flakes, granules or powder

High Detergency

Rapid Wetting

Thorough Emulsification

Excellent Dispersion

Fast Penetration

Stability in Solution

Compare new, better D-40 for efficiency and performance—you'll agree there just isn't a better all-around surfactant. Economical D-40 is almost odorless, has a whiter white color, is caking resistant, has high foam stability in presence of grease. Oronite's higher active D-60 is also better than ever.

Contact nearest Oronite office for product data and samples.

New liquid Dispersant NI-W

Low Sudsing

Easy Rinsing—No Residue

Fast, Thorough Wetting

Exceptional Detergency

Neutrality and Stability

Solubility and Dispersibility

**Compatibility with Anionic
and Cationic Compounds**

New water-soluble Dispersant NI-W is a clear, light-colored nonionic surfactant. It is both heat and chemically stable—effective in hard or soft water. Very adaptable for manufacture of economical, high-quality formulations. Its new companion product, Dispersant NI-O, is an outstanding emulsifier for water-in-oil emulsions.

*The world's largest producer
of synthetic detergent
raw materials*



ORONITE CHEMICAL COMPANY

38 SANSOME STREET, SAN FRANCISCO 4, CALIF.
30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y.
STANDARD OIL BLDG., LOS ANGELES 15, CALIF.
600 S. MICHIGAN AVENUE, CHICAGO 5, ILL.
MERCANTILE SECURITIES BLDG., DALLAS 1, TEXAS

When inquiring check CP 3269 on handy form, pgs. 2-3

MATERIALS

Hexachlorocyclopentadiene — large scale process for manufacturing . . .

product is raw material in certain insecticides,
also reactive chemical intermediate

Although hexachlorocyclopentadiene has been known as a chemical curiosity for a long time, it wasn't until the advent of some of the current important insecticides that large scale manufacture assumed importance.

A large scale process of interest is one based on liquid phase chlorination of cyclopentadiene to octachlorocyclopentadiene which later cracked to hexachlorocyclopentadiene. The process depends upon the use of a vapor phase catalytic chlorination of polychloro normal or iso-pentane in greatly increased yields. Three distinct steps must be operated in series continuously.

First, pentane is photochlorinated in the liquid phase. Second, the polychloropentane produced is vaporized, further chlorinated, and simultaneously cyclized by dehydrochlorination — giving a mixture containing hexachlorocyclopentadiene and octachlorocyclopentene. Third, the latter substance is cracked to hexachlorocyclopentadiene.

The product is not only of interest as a raw material for certain insecticides, but is also a very versatile chemical. Through its conjugated double bonds it readily enters many Diels-Alder reactions. Of particular interest is union with maleic acid to give the so-called "HET" acid which is capable of giving a variety of alkyd and polyester plastics. These plastics by virtue of their large chlorine content are flame retardant and therefore are expected to find utility in fire retardant paints.

The chemical also readily yields alkoxy derivatives and condensation products with other chlorohydrocarbons. It also reacts to yield compounds with quinoid structures.

(Summary of paper delivered before Biloxi meeting of A.I.Ch.E., entitled "The Manufacture and Reactions of Hexachlorocyclopentadiene" by A. H. Maude and D. S. Rosenberg of Hooker Electrochemical Company.)

Making alkyds, rosin esters from sorbitol — 16 pages

Two-color, 16-page bulletin suggests the proper uses and formulations for preparing commercial-type, oil-modified alkyds and rosin esters from maker's sorbitol — a polyhydric alcohol. Presented in tabular form are solids composition, solution composition and properties, air drying data, color retention values, degrees of compatibility, and film properties for 6 typical alkyd resins compounded with sorbitol. Solid resin and solution properties, solubility, and compatibility are tabulated for six rosin esters.

"Sorbitol Resins" is issued by the Industrial Chemicals Department of the Atlas Powder Company, Dept. CP, Wilmington 99, Delaware. When inquiring specify CP 3270 on handy form, pages 2 and 3.

MATERIALS

Solvent applications are outstanding for dimethylformamide

Drum and tank car quantities of dimethylformamide are now available. Product has many useful applications as a solvent in the chemical process, textile, paint, and other fields.

Dimethylformamide as a solvent will dissolve such materials as synthetic and natural resins, inorganic salts, and gases. It is recommended for use in the purification of acetylene, as a solvent medium for organic reactions, as a solvent for acrylonitrile polymers, and for solvent extraction processes where a high degree of selectivity may be required.

(Samples and technical literature are available from the Rohm & Haas Company, Washington Square, Philadelphia, Pennsylvania . . . or for more information check CP 3271 on handy form, pages 2 and 3.)

Gives useful information on plating accessories

Sixteen-page, two-color bulletin describes and illustrates a complete line of anodes, anode accessories, plating processes and plating chemicals.

Specifications and recommended applications are given for 9 styles of anode bags, 3 types of diaphragms and 12 types of anodes. Bulletin describes 16 different plating processes as well as the type of deposit. Special equipment that the different baths will plate is listed. Bulletin also describes 30 salts commonly used in electroplating baths; 11 brighteners used in manufacturer's solutions; 6 kinds of purification materials; and the oxidizing liquid used in copper, bronze and silver plating.

Bul AC-107 is issued by Hanson-Van Winkle-Manning Co., Dept. CP, Matawan, N.J. When inquiring specify CP 3272 on handy form, pages 2 and 3.

For more information on product at right, specify CP 3273 . . . see information request blank between pages 2 - 3.

Proved through the years

Time is the test of dependability. Behind Nialk Chemicals are

more than fifty years of experience in meeting strict specifications.

a typical example...

NIALK CAUSTIC POTASH: Railroad signals and navigation lights must give instant, peak performance in all kinds of weather. NIALK Caustic Potash sees that they do. It "weatherproofs" electric cells, assures dependable current even at sub-zero temperatures.

The quality of this and other NIALK chemicals—today as in the past—is the result of broad research, strict quality control and a knowledge of the needs of industry.

NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, New York

Nialk

LIQUID CHLORINE
CAUSTIC POTASH
CARBONATE OF POTASH
PARADICHLOROBENZENE
CAUSTIC SODA
TRICHLOROethylene

QUARTZAL TETRACHLORO PHTHALIC ANHYDRIDE



MATERIALS

Offer new ultrafine calcium carbonate

Witcarb RC is a coated, ultrafine addition to maker's line of calcium carbonates for the rubber industry. Available in commercial quantities, Witcarb RC is characterized by easy dispersion without need for special handling. It is reported to offer lowered costs and improved quality where dispersion is a factor. Product is said to eliminate master-batching; it does not retard cure, has same basic properties as uncoated ultrafine product under Witcarb tradename.

(Product of the Witco Chemical Company, Dept. CP, 260 Madison Avenue, New York 16, New York. . . check CP 3274 on handy form, pages 2 and 3.)

Processing and production of rare earth chemicals

Production and processing of rare earth chemicals by company are briefly described in 12-page bul. Bul "Some Facts About Lindsay Chemical Company" is available from Lindsay Chemical Co., Dept. CP, West Chicago, Ill. When inquiring specify CP 3275 on handy form, pages 2 and 3.

Chemical uses for ozone continue to develop . . .

research interested in metal ozonides, and use of ozone to form organic oxidizing intermediates

What's the future for ozone in the chemical processing field? What research and development projects now in progress look best for commercial fruition? What are some of the problems which must still be solved before ozone can be considered as a competitive reagent? To get answers to these and other questions, the editors of CHEMICAL PROCESSING interviewed Clark E. Thorp and Frank Holloway of the Armour Research Foundation of Illinois Institute of Technology. The Foundation has been working with ozone generation, handling and utilization for at least ten years, and these men are at present in the thick of projects connected with the substance.

Seven different projects, sponsored by government and industry, are going on at the Foundation. Naturally, ARF is pledged to secrecy on these sponsored projects, but the research men did release the information that ozone is being used on starch, with "very interesting results." The Foundation is also studying — for USDA's Southern Research Laboratory — methods for producing pinic acid from alpha pinene. This program is aimed at development of commercial methods for producing pinic and pinonic acid at a cost comparable to that of other dibasic acids.

Among the "ozone ideas" which have passed initial lab try-outs but have not yet been sponsored are three, possibly four, that stand out. All of these ideas, by the way, originated with staff members. The stand-outs, not necessarily in order of importance:

1) Manufacture of metal ozonides. These compounds are potent oxidizing agents, but are relatively stable under normal conditions. They

for your information...

brief summaries of helpful product news

Save Time Handling Phthalic Anhydride



EASY HANDLING . . . you can move a ton of phthalic anhydride at a time by fork truck and eliminate manual handling of individual bags during unloading.



IMPROVED WAREHOUSING . . . uniform units can be stored in safe, neat stacks. They are easily tiered so that three tons can be placed in an area only four feet square.

Man-hours for Unloading Cut 67% As Monsanto Unitizes Phthalic Anhydride

Unitizing is Monsanto's new method for speeding the handling of phthalic anhydride. In actual tests the new method has already reduced the man-hours of handling required for unloading phthalic anhydride by as much as 67%.

Here's how it works: eighty-pound bags are stacked on expendable paperboard bases to form units of one ton each. The bags in each unit are held to one another by a glue which has high adhesive power, yet allows bags to be separated without tearing. Each unit is raised by fork truck and quickly moved from boxcar to unloading dock where it may be placed on regular wooden pallets.

Trial shipments have shown that this method will save 55% in time and 33% in the number of men unloading a 5000-pound car.

In a typical case, three workers—two laborers and a fork lift operator—took four and one-half hours, or thirteen and one-half man-hours to unload a shipment.

To test the effectiveness of the new method, an identical shipment was unitized. As a result, only two men—one laborer and the fork-lift operator—were required and they did the job in just two hours, or four man-hours. Total savings in man-hours: 67%.

For complete details on handling unitized shipments call your nearest Monsanto sales office or mail the coupon.

Orthodichlorobenzene Used to Remove Carbon In Auto Maintenance



The low order of toxicity of orthodichlorobenzene makes this versatile liquid solvent a valuable cleaning agent for such things as removing carbon from engines as well as grease residues from wrenches, jacks, floors and motor parts. It is also used as a cleaning agent in machine shops, die works, tool rooms, etc.

Versatile orthodichlorobenzene can do many other jobs, too. Following are a few applications:

- Spotting agent in dry-cleaning
- Vehicle in leather dyeing
- Grease-cutting agent
- Paint, varnish remover
- Shoe polish ingredient

For a booklet on ortho, check the coupon.

Free-flowing, Non-dusting Fumaric Acid Available



Monsanto fumaric acid — now available in commercial quantities—has several major advantages for users.

It is *free-flowing* and *non-dusting*, thanks to its granular, crystalline form.

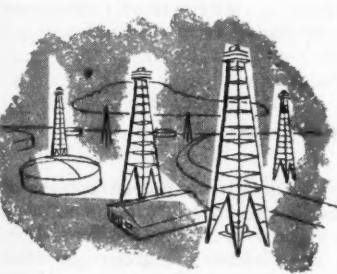
Monsanto fumaric acid is also easier to handle; comes in handy 50-pound multiwall paper bags.

Other major advantages of fumaric acid in alkyd resin manufacture include: high melting point, low order of toxicity and minimum corrosive action against materials normally used in resin making. For information on prices and delivery, mail coupon.

Phenol Used on Textiles

Either Monsanto phenol or thiourea can now be used to create a seersucker-type synthetic fabric.

The phenol or urea is "printed" on the synthetic textile, causing the fibers to shrink in the many small areas touched by the compound. The result is the puckered effect of seersucker. Mail coupon for more information.



Phosphoric Acid Aids Liquid Fuel Manufacture

Polymerizing gaseous olefine hydrocarbons to liquids has now become a matter of considerable economic interest. Reason behind this development: the large quantity of lighter unsaturates being produced as by-products in petroleum cracking.

Among the most promising catalytic method of polymerization is that using phosphoric acid as a catalyst. This process is covered by patents of a major oil company which licenses users. Phosphoric acid is spread in a thin film on a nonporous-type support.

Aroclor 1248 Useful In Heat Transfer

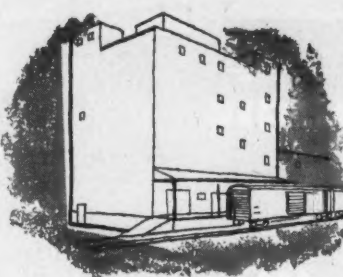
Aroclor* 1248 is rapidly gaining in popularity as a heat-transfer medium. It is a nonflammable, liquid-phase, heat-transfer fluid, designed for operation at atmospheric pressure at maximum temperatures of 300° C.

Outstanding performance characteristics of Aroclor 1248 were demonstrated in a unit designed for pilot operations to reach temperatures not attained by ordinary steam pressures.

A portable electric heater was devised with Aroclor as the heat-transfer medium. Extensive testing showed the use of Aroclor had several advantages:

- Freedom from fire hazard.
- Viscosities sufficient to permit pumping at room temperatures.
- Boiling point sufficiently above 300° C. to assure liquid condition at all times.
- Stability against heat, plus enough safety factor to accommodate accidental overheating.
- Other advantages such as controlled vaporization loss, freedom from minimum corrosive action and freedom from toxicity hazard (in properly enclosed system) were also obtained.

Use the coupon below to order a bulletin that describes the physical properties of Aroclor 1248.



21% Monsanto DCP Gives Users 4 Advantages

If you are using dicalcium phosphate, investigate the advantages of 21% dicalcium phosphate which Monsanto makes along with the 18% grade.

Each of these products has its place and application. The more concentrated form, in particular, offers these benefits to users:

1. *You save money.* Not only on freight, but also on the actual cost per unit of phosphorus f.o.b. the plant.
2. *You get flexibility in formulation.* Since less material is used, your nutritionist can vary his other ingredients . . . increase the energy value of the feed to a greater degree.
3. *Your customers* require less storage space.
4. *You gain over 14% in phosphorus* supplement warehouse space.

To put all these advantages to work for you, send the coupon today for more information on Monsanto DCP.



*Reg. U. S. Pat. Off.

.....

• **MONSANTO CHEMICAL COMPANY** 9/53

• 1702 South Second Street, St. Louis 4, Missouri

• Please send information on: ☐ Fumaric Acid ☐ Phenol ☐ Orthodichlorobenzene

• ☐ Unitized Phthalic Shipping ☐ 21% DCP, feed grade

• Please send: ☐ Bulletin P-130, "Aroclors as heat-transfer medium"

• Name Title

• Company

• Street

• City Zone State

•

MATERIALS

react violently with water, liberating oxygen, light and heat. Metal ozonides quite possibly may open new vistas as new chemical reagents, since they could be made to provide both oxidizing power and reaction-directing catalytic action. Ozonides have been made from the alkali metals, nickel, molybdenum, manganese and the rare earth metals.

2) Formation of oxidizing intermediates by direct reaction with aldehydes, alcohols and organic acids. This reaction is possible because of the high oxidizing potential of ozone, second only to that of fluorine.

3) Use of low concentrations of ozone to catalyze and speed up oxidation in formation of hydroperoxides. Ozone itself is not the actual oxidizing agent in this case.

4) Although still in the "think" stage at ARF, the reaction of moist ozone and coal to produce acids is considered a good possibility for future investigation. Research elsewhere has shown that the ozone converts a significant fraction of the carbon directly to water-soluble products, without intermediate formation of humic acids. It remains to be seen if high-concentration ozone will speed the reaction. Perhaps the reaction could be conducted in a fluid-bed type of reactor.

What are the main problems which have held back widespread commercial use of ozone? According to Clark Thorp, there are three: 1) It has had too high a cost; 2) Space for generating the tonnage amounts necessary in many commercial reactions has been unreasonably large; and 3) The gas has not been available in the higher concentrations necessary for some reactions.

In addition, there are "minor" problems which would have to be solved along the way. Materials of construction would have to be chosen carefully because of the unique properties of high-concentration ozone. Silicone grease decomposes quickly in the presence of ozone concentrations approaching 10%.

The men at Armour Research are pretty sure they have the answers to the main questions and many of the smaller ones. They have been working with ozone concentrations as high as 100% and as low as hundreds of parts per million. (Incidentally, they have developed a positive method of determining these low concentrations directly.) For some of their work, they have diluted the ozone with various types of gases, making atmospheres that consist of, say, neon or argon and ozone, without any nitrogen or oxygen.

As ozone continues to enter the industrial picture, it will probably be generated at the site of use for quite awhile. Not that it can't be shipped because of its instability, says ARF, which reports it has successfully stored 100% ozone, without decomposition, for days. But much research and testing must be done before the ICC can set up shipping regulations, and up to that time it will be unlawful to ship ozone. So, emphasizes Clark Thorp, don't write Armour Research Foundation for your "free sample."

(The editors sincerely thank the personnel of the Armour Research Foundation of Illinois Institute of Technology, 35 W. 33rd St., Chicago, Ill.)

When inquiring check CP 3276 on handy form, pgs. 2-3

the magic
of
CO₂ ...

**FREEZES
HARD-TO-GRIND
MATERIAL**

CO₂ — in liquid or solid form—plays a new role in still another vital operation: pulverizing certain food-stuffs, pharmaceuticals, resins, plastics and similar "soft" goods. By sub-cooling viscous materials to a brittle state, CO₂ makes them easier to grind and at the same time eliminates high temperatures that may injure heat-sensitive ingredients. CO₂, an inert gas, also helps to prevent flash fires and oxidation. And CO₂ is non-corrosive...will not affect ordinary cast iron or steel grinding mills.

CO₂ — in solid, liquid or gaseous form — is finding wider and wider application with today's research technicians. A refrigerant...chemical...inert gas...pressure medium...and carbonation agent—it offers a

unique combination of properties. Often, two or more of these properties can be employed in a single operation! Low cost and ready availability make it a natural for hundreds of heretofore untried uses in a score of industries. If you'd like further information about CO₂ — or specific information about its applications in grinding operations — write today!



PURE CARBONIC COMPANY

A DIVISION OF AIR REDUCTION COMPANY, INCORPORATED

General Offices: 60 East 42nd Street, New York 17, N. Y.

at the frontiers of progress you'll find



When inquiring check CP 3277 on handy form, pgs. 2-3

MATERIALS

**"It's one of the safest
insecticides to handle"**
— USDA ...

controls 200 pests on over 50 commercial crops; may not produce resistant insect strains

Uses: General-purpose insecticide, usable as a spray or dust for such pests as mites, plant lice, mealy-bugs, leaf hoppers, thrips, scale insects, white flies, and some beetles and caterpillars.

Features: Maker reports that the Department of Agriculture describes product as "one of the safest insecticides to handle." The general-purpose nature of the product in many cases eliminates need for several specific killers to control the pests mentioned above.

Maker reports that there is good evidence that the product will not produce resistant strains of insects, however, further study will be needed to verify this.

Description: Malathion is sold as a technical grade product to insecticide formulators. It is related chemically to parathion, yet does not have anywhere near the human toxicity. In tests, the product has afforded control over more than 200 insects on over 50 different commercial crops.

(Malathion insecticide is a product of Agricultural Chemicals Division of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, New York... or for more information check CP 3278 on handy form, pages 2 and 3.)

Outlines the many uses of zinc dust

Publication gives details on the advantages of using zinc dust in the manufacture of bleaches, as a reducing agent, as a catalyst, purifier, precipitating agent, as an additive to grease and other materials for pipe thread lubrication, and particularly in the formulation of paints. Four-page bulletin points out that zinc dust paint is highly effective on iron and steel, in salt air atmospheres and where the painted surface comes into actual contact with brine. Bul 141 is issued by Federated Metals Division, American Smelting and Refining Co., Dept. CP, 120 Broadway, New York 5, N. Y. When inquiring specify CP 3279 on handy form, pages 2 & 3.

**"Higher dielectric strength
than any other known
silicone rubber" ...**

coating material has a useful temperature range from minus 60 to plus 315°C

Uses: For coating many Class H insulating materials or for dipping electrical components, and can be used at low temperatures for Class A and B insulation.

More specifically, it can be used as a coating for glass cloth, glass mat, organic fabrics, mica mat, terratex, and quinterra. May serve as an encap-

MATERIALS

insulating material for coils and cores and as an impregnant for glass-served wire, a capacitor dielectric, and many other electrical uses. Reported to open up new design possibilities in such non-electrical applications as gaskets, flexible ducts and tubes, adhesives, stripping coats, and stopoff enamels.

Features: The silicone rubber coating material is said to have a higher dielectric strength than any other known silicone rubber and shows little or no change in electrical properties at temperatures as high as 315°C. It is thought these factors will suit the material for many insulating applications where silicone resins have been used.

Description: SE-100 silicone rubber coating material is stable over the temperature range from minus 60 to plus 315°C. Abrasion resistance is good and tensile strength is 150 pounds per inch of width. Even after being creased four times, it retains a tensile strength of 87 pounds per inch of width. As a coating on tapes and wrappers for heavy electrical equipment, SE-100 is said to overcome cracking problems inherent in brittle resin products. The material is readily bent over an 1/8" mandrel at -60°C, yet it does not soften or flow at 315°C.

As a dipping or encapsulating material, SE-100 is suggested for use on any coil or small electrical component where moisture and heat resistance is required. Because it is cured more quickly than resins and gives a tough, flexible protective coating, it is predicted that some parts can be redesigned without the need for costly metal casings. Weather and corona resistance, water repellency and release characteristics are similar to most silicone products.

SE-100 is a white, putty-like compound supplied as a 100% solids material, or as a 35% solids dispersion in xylene (SE-100S).

(Product of the General Electric Company, Dept. CP, Pittsfield, Massachusetts . . . or for more information check CP 3280 on handy form, pages 2 and 3.)

Announce three C-14 amino acids . . .

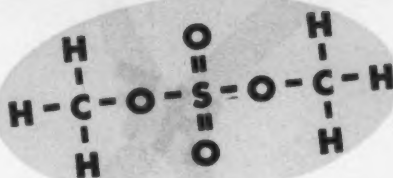
aspartic, lauric, and stearic acids expected to stimulate various researches

Three carbon-14 labeled amino acid compounds have been added to this manufacturers line which are expected to stimulate work on monomolecular layer studies, flotation studies, and research in the soap and oil fields.

Lauric acid-1-C-14 (cat #L4-22) and stearic acid-1-C-14 (cat #L4-23) have a specific activity of 1.0 millicurie per millimole; dl-aspartic acid-4-14 (cat #L5-15) has a specific activity of 0.5-1.0 millicurie per millimole.

(Products of Tracerlab, Inc., Dept. CP, 130 High Street, Boston 10, Massachusetts . . . or for more information check CP 3281 on handy form, pages 2 and 3.)

AN IDEA-CHEMICAL FROM DU PONT



DIMETHYL SULFATE

METHYLATION PROPERTIES

— **Effective methylating agent** for preparation of methyl-substituted oxygen, nitrogen or sulfur compounds.

— **Methylation** is usually carried out in the presence of an alkali. While the first methyl group reacts more readily than the second, both groups react readily in an essentially anhydrous system.

— **High reactivity** toward active hydrogen compounds and high boiling point of Dimethyl Sulfate makes autoclaving unnecessary in methylation reactions. Methyl halides frequently require autoclaves in similar reactions.

SOLUBILITY DATA

— **Soluble in water** to extent of 2.8 g/100 cc at 18°C. Hydrolysis is rapid at or above this temperature.

— **Soluble in alcohol, ether, benzene.**

CORROSION CHARACTERISTICS

— **Anhydrous Dimethyl Sulfate** is inert to iron and steel . . . mildly corrosive to copper. Hydrolyzed solutions have the corrosion properties of sulfuric acid.

Here's an economical methylating agent you should investigate

Dimethyl Sulfate, a highly reactive compound, is a useful methylating agent in organic synthesis. Offering economy in methyl-substitution reactions, it is more reactive at low temperatures than most other methylating agents, and has a high boiling point (188.8°C.) which permits its use at atmospheric pressures.

A clear, colorless liquid, Dimethyl Sulfate is soluble in alcohol, ether and benzene. It is used in the manufacture of a number of synthetic drugs, including caffeine, codeine, antipyrine and methyl hydrazine sulfates. In addition, it finds application in the manufacture of dye intermediates.

Why not investigate the use of Dimethyl Sulfate in your business? We'll be glad to send you more information on this reactive methylating agent—specifications, properties, suggested uses, etc. Just send in the coupon below or write to: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington, Delaware.

AVAILABILITY: Du Pont Dimethyl Sulfate is shipped in tank cars, special 55-gallon returnable steel drums (net wt. 555 lbs.) and special 10-gallon returnable steel drums (net wt. 100 lbs.).

Serving Industry with Idea-Chemicals

AMIDES • ALCOHOLS • ESTERS • ORGANIC ACIDS • SOLVENTS • RESINS



BETTER THINGS FOR BETTER LIVING
... through Chemistry

Polychemicals
DEPARTMENT
CHEMICALS • PLASTICS

E. I. du Pont de Nemours & Co. (Inc.)
Polychemicals Department 589, Wilmington 98, Del.

Please send me more information on Du Pont Dimethyl Sulfate—specifications, properties, suggested uses, bibliography, etc. I am interested in evaluating Dimethyl Sulfate for the following applications:

Name _____ Title _____
Firm _____
Address _____
City _____ State _____

When inquiring check CP 3282 on handy form, pgs. 2-3



SULPHUR-DIOXIDE

HIGHEST QUALITY

SO₂

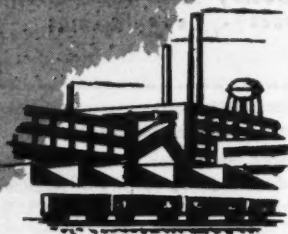
MAY BE YOUR ANSWER!

It may be that you have use for a superior reducing or bleaching agent, antichlor, PH control or neutralizer. Our technical staff is ready to help you to produce greater efficiency and increased profits through the use of Tennessee's highest quality Sulphur Dioxide in your research, processing or production problems.

Let us send you descriptive material on Tennessee's highest quality Sulphur Dioxide (SO₂) today.

CONTAINERS

- Cylinders
- Ten Drums
- Tank Trucks
- Tank Cars



TENNESSEE CORPORATION

617-29 Grant Building, Atlanta, Georgia

For detailed information,
phone, wire or write—

When inquiring check CP 3283 on handy form, pgs. 2-3



Obviates Need for Hydrofluoric Acid in Many Pickling, Etching Operations

materials

**Powdered material is safely, easily handled
in removing silica, sand, and scale from
steels, aluminum, titanium**

USES: In most cases can be used to replace hydrofluoric acid in the surface treatment of metals. Specifically, it can be used in combination with sulfuric acid to remove silica, sand, and scale from steel, and also to etch aluminum. Combined with nitric acid it produces mixtures that remove silicon and copper from aluminum to give clean, white surfaces. With nitric acid and ferric sulfate it may be employed for pickling steel.

Also recommended for use in acid pickles in plating cycles to remove siliceous films. Replaces hydrofluoric acid in the pickling of titanium.

Features: Actane 33 pickling and activating agent is a powdered product, much more safely and easily handled than liquid hydrofluoric acid.

Description: Actane 33 is a crystalline, acidic mixture containing soluble fluorides, penetrants, and activating agents. Some specific application data and techniques follow:

Removal of colloidal films in cleaning cycles: Actane 33 is recommended for use in the hydrochloric or sulfuric acid dips employed in cycles preparing metals for electroplating. Addition of the agent permits faster pickling and removal of siliceous films. A concentration of 2 oz/gal of Actane 33 is usually added to the pickling solution.

Pickling of titanium: Pickling of titanium is greatly accelerated by the use of Actane 33. Suggested formula for pickling is (operating temperature range 70-150°F):

Sulfuric Acid, 66°Be	10% by volume
Water	90% by volume
Actane 33	8 oz per gal acid mixture

Etching of aluminum: Acidified Actane 33 solution will etch aluminum very rapidly (operating temperature range 70-150°F). Recommendations for concentration are:

Sulfuric Acid	10% by volume
Water	90% by volume
Actane 33	6 oz/gal

Etching can be accelerated by either increasing the concentration of Actane 33 or by raising the temperature. If the aluminum alloy being etched does not contain silicon but does contain copper, a black residue will remain after etching that can be readily removed with nitric acid dips — for example, a dip composed of equal parts nitric acid and water. If the alloy contains silicon, nitric acid dips containing Actane 33 should be used (see following data).

Etching and cleaning aluminum alloys containing silicon and/or copper: Where hydrofluoric acid is conventionally required, comparable pickling mixtures can be made from Actane 33 using the following formula (operating temperature range 70-90°F):

Concentrated Nitric Acid, 36°Be	3 volumes
Water	1 volume
Actane 33	1 lb/gal

If faster action is required with the above formula, increasing the concentration of Actane 33 will help. Additions up to 2 lb/gal have been found satisfactory. The temperature should not be allowed to rise above 100°F, otherwise excessive attack of aluminum will ensue and cleaning will not be optimum.

When mixture is first made up, it should be cooled below 90°F. If large objects are treated in small etching tanks, there may be a tendency to overheat. Suitable cooling systems will rectify this.

Pickling of iron castings containing sand or silica:

Actane 33 can be used in place of hydrofluoric acid for removal of silica or sand from castings. A concentration of 10% by volume sulfuric acid with 1 lb/gal of Actane 33 is suggested. Higher concentrations may be used if faster removal is desired.

Pickling nickel and chromium steels (stainless steels): Fast pickles for stainless steel can be made with nitric acid concentrations from 10-30% by volume with from 1 to 2 lb/gal of Actane 33, again obviating the need for hydrofluoric acid. They will frequently pickle at room temperature, but faster operation is obtained at 130°F.

(Actane 33 is a development of Enthone, Incorporated, Dept. CP, 442 Elm Street, New Haven, Connecticut . . . or for more information check CP 3284 on handy form, pages 2 and 3.)

**Properties of polyethylene glycols
indicate wide range of uses**

Recently announced as available in commercial quantities is a group of polyethylene glycols which have specific properties indicating applications in the textile, adhesive, rubber, pharmaceutical, metals, resin, paper, and cellulose fields. Known as Polyethylene Glycols 200, 300, 400, 600 and 1000, the materials have average molecular weights equal to the respective product designation.

Generally, these compounds have shown themselves to be effective plasticizers for a variety of compounds, many of vegetable and animal origin. In addition, they are useful as lubricants in the textile and rubber processing industries and as intermediates in the preparation of ethers and esters.

The ethers of PEG (polyethylene glycol) are useful as solvents and inert media for Grignard and sodium condensation reactions. PEG fatty acid-derived esters are non-ionic surface active agents valuable as detergents, textile and metal lubricants, emulsifying agents, and vehicles for a number of therapeutic agents. Dibasic acid-derived esters of PEG form alkyd-type resins.

In the textile field these glycols are employed in the manufacture of textile specialty products and in the preparation of emulsifiers for textile lubricants. In addition, they act as antistatic agents and as lubricants for certain warp sizes used on acetate yarn. In connection with the manufacture of adhesives, they are used as plasticizers for starch paste.

As vehicles for certain therapeutic agents dispensed in ointment form (among them antibiotics, antihistamines, anesthetics, antiseptics, and fungicides), these compounds find application in the pharmaceutical field. They also are used as vehicles for peroxides and sulfa drugs and for the active agent in dentrifices.

(Polyethylene glycols are produced by Jefferson Chemical Co., Inc., Dept. CP, 260 Madison Ave., New York 16, N. Y. . . . or for more information check CP 3285 on handy form, pages 2 and 3.)

The DuPont Company pioneered the development of alkyd resin finishes during the twenties, and for many years has used Glycerine alkyds in its popular "Dulux" finishes to provide gloss and color retention, durability, and relatively fast dry. Dulux's unusual combination of properties makes it a favorite in applications ranging from house shutter and trim paints to automotive finishes...from refrigerator and appliance coatings to marine paints.

When alkyd resins were first introduced, they virtually revolutionized the paint industry. E. I. duPont de Nemours & Company has used Glycerine alkyds since the twenties to formulate many of its famous finishes for the industrial, automotive, and trade sales fields.

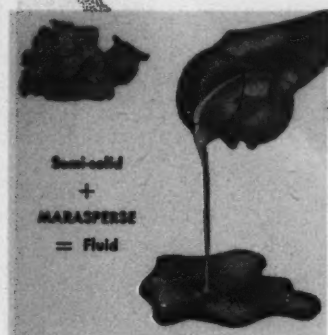
Glycerine-derived alkyds improve color retention and film toughness in air-drying coatings for metal equipment. They contribute flexibility and adhesion to baking finishes—where their compatibility with other resins like ureas and melamines is essential.

America's leading paint makers have also found Glycerine easier to work with in the critical resin-making operation. For light-colored alkyds, Glycerine is available to meet the exacting standards of the color-conscious paint industry.

"Why Glycerine for Alkyd Resins and Ester Gums?" tells the story of these applications with detailed information on the chemical and physical properties of Glycerine. For your copy, write Glycerine Producers' Association, 295 Madison Ave., New York 17, N. Y.

Nothing takes the place of Glycerine

When inquiring check CP 3286 on handy form, pgs. 2-3



MARASPERSE dispersants are more effective and considerably more economical to use. They are completely soluble in water, are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.

With the addition of as little as only .05% to a maximum of 3.0% of MARASPERSE, (based on weight of solids), from 35% to over 300% MORE solids may be dispersed and maintained in fluid suspension.

MARASPERSE stabilizes water dispersions of insoluble solids by setting up repulsive forces on the particles, thereby preventing flocculation.

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wettable powder insecticides, industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for File No. 301. You will receive complete technical data on Marasperse products. Also available on request is Bulletin No. 119 entitled "Marasperse for Stabilizing Oil-In-Water Emulsions". Marathon has increased greatly its facilities for the production of Marasperse dispersants with the result that they are once again available to new users in virtually unlimited quantities.



MARATHON Corporation
CHEMICAL DIVISION • ROTHSCHILD, WISCONSIN

When inquiring check CP 3287 on handy form, pgs. 2-3

MATERIALS

Research quantities of diketene acetone adduct being offered

Uses: Parallels the reactions of diketone . . . reacting with alcohols to yield acetoacetates, with aniline to yield acetoacetanilide, and with alkali to yield dehydracetic acid.

Features: Reported pleasant smelling and stable.

Description: Diketene acetone adduct (2,2,4-trimethyl-6-keto-1,3-dioxene) is currently being offered by manufacturer in research quantities.

(Product of The Aldrich Chemical Company, Dept. CP, 161 West Wisconsin Avenue, Milwaukee, Wisconsin . . . or for more information check CP 3288 on handy form, pages 2 and 3.)

Presents detailed information on electroplated gold

Four-page, informative bulletin summarizes wealth of information on electroplated gold. Convenient tables list data on physical properties, thermal characteristics, chemical properties, electrical properties, diffusion coefficients, and electroplating specifications. Graphic charts show optical properties and the effect of gold concentration on current efficiency.

"Electroplated Gold" is issued by Technic, Inc., Dept. CP, 39 Snow St., Providence, R. I. When inquiring specify CP 3289 on handy form, pages 2 and 3.

Polymerizes, copolymerizes — N-vinyl-2-pyrrolidone

N-Vinyl-2-pyrrolidone is currently available in drum lots from high-pressure-acetylene reactions. Compound polymerizes readily and the resulting polymers have many industrial applications owing to the complexing ability and water solubility of the molecule. It is also of interest in copolymerization reactions with acrylic acid, acrylonitrile, styrene, and other vinyl monomers. Products from such reactions range from adhesives to surface active agents.

(Product of General Aniline Works Division of the General Aniline & Film Corporation, Dept. CP, 435 Hudson Street, New York 14, New York . . . or for more information check CP 3290 on handy form, pages 2 and 3.)

Porcelain enameling of aluminum — It's new

A porcelain enameling frit has been developed for coating aluminum which is expected to open up many new architectural and industrial uses for this metal. DuPont Company gets credit for development of the frit which melts at about 1000°F, as

FOAM'S A THIEF



with DOW CORNING ANTIFOAM A

Use productive capacity now wasted on foam; cut processing time with Dow Corning Antifoam A, the silicone defoamer that works at concentrations in the range of:

- 3 ppm in recirculating cooling brines
- 2.5 ppm in bottling soft drinks
- 2 ppm in varnish cooking
- 200 ppm in textile resin backings
- 0.4 ppm in steel pickling baths

Effective at remarkably low concentrations in a wide variety of foamers, Dow Corning Antifoam A compound is harmless physiologically. It can be used as received, mixed with one of the foaming ingredients or dispersed in a solvent for industrial applications.

Equally versatile and more easily dispersed, Dow Corning Antifoam AF Emulsion is a water dilutable defoamer containing 30% Antifoam A. Originally designed for use in the food processing industries, Dow Corning Antifoam AF Emulsion has a wide field of industrial usefulness.

see for yourself!

mail coupon TODAY for **free sample**

DOW CORNING SILICONES
Dow Corning Corporation
Midland, Mich., Dept. 88-9

Please send me data and a free sample of—

- ☐ Dow Corning Antifoam A or
- ☐ Dow Corning Antifoam AF Emulsion

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

When inquiring check CP 3291 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

compared with frits for steel which melt around 1500°Fahrenheit.

Coating can be applied with ordinary enameling and firing procedures after the aluminum is prepared, with the exception, of course, that lower firing temperatures are employed. Coating is said to answer the need for ceramic coating for aluminum that is colorful, resists corrosion, abrasion, thermal shock, impact, flexing, as well as offering wide latitude in fabrication.

(Manufacturing and supply of the frit will be handled by the Ferro Corporation, Dept. CP, 4150 East 56th Street, Cleveland, Ohio . . . or for more information check CP 3292 on handy form, pages 2 and 3.)

Folder Introduces polishing agent

"Attasorb" is the title of a 4-page, 2-color folder introducing an ultra-fine, free-flowing polishing agent by the same name. Outstanding feature of the new agent is its good sorptive properties. Folder covers properties and chemical composition, and offers typical polish formulation. Issued by the Attapulugus Minerals & Chemicals Corporation, Dept. CP, 210 West Washington Square, Philadelphia 5, Pennsylvania. When inquiring specify CP 3293 on handy form, pages 2 and 3.

Low-acid turpentine stays sparkling clear in storage

With improved distilling methods and equipment worked out at USDA's Olustee, Florida, Naval Stores Station, the gum naval stores industry is now producing turpentine with unusually low acid content. This means that today's gum turpentine stays sparkling clear in storage. It has helped pine-gum farmers of the Southeast retain market worth more than \$1 million a year, that were threatened by darkening of turpentine due to resin acids. The research that led to this latest improvement in pine-gum processing is reported to have cost \$65,000.

(From "Agricultural Research", Vol. 2, July 1953, Number 1.)

Desk card features blacks for rubber industry

A convenient desk card lists maker's channel and furnace blacks which are offered to the rubber industry. Channel blacks include easy, medium, and hard processing, as well as conducting channel grades. Furnace blacks include semi-reinforcing, high modulus, fast extruding, medium abrasion, and high abrasion grades. Desk card 53-3 is issued by the Witco Chemical Company, Dept. CP, 260 Madison Avenue, New York 16, New York. When inquiring specify CP 3294 on handy form, pages 2 and 3.

AFTER 21 YEARS....

THE **EDWAL**

LABORATORIES, INC.

changes
its
name
to

RINGWOOD

C H E M I C A L C O R P O R A T I O N

The new corporate title better describes our activities as large scale manufacturers of organic chemicals of high purity for the process industries.

Over one half-million dollars spent on additions to plant and equipment at Ringwood, Illinois, during the past several years enables us to serve our old customers better and to solicit new inquiries for tonnage quantities of fine organic chemicals.

New automatic equipment increases our capacity for private label formulation and packaging. An expanded research and development group helps us solve your raw material and product problems.

The same management and staff that built the Edwal reputation for technical competence, for imagination in research and development, for production efficiency and quality, will carry on the operations of the Ringwood Chemical Corporation.

We are as close as your phone. Call on us for fine chemicals.

RINGWOOD CHEMICAL CORPORATION
RINGWOOD, ILLINOIS • PHONE WONDER LAKE 2411



When inquiring check CP 3295 on handy form, pgs. 2-3

MATERIALS

Offer phenolic for general-purpose molding

Durite GP-151 is the name that has been applied to a new general-purpose phenolic thermo-setting molding compound. Good machining and buffing qualities, high mechanical strength and surface lustre, and excellent drilling and tapping characteristics are reported. Material is also said to have a wide range of flows and to be fast curing.

(Durite GP-151 is available in black or brown from Chemical Division of the Borden Company, 5000 Summerdale Avenue, Philadelphia 24, Pennsylvania . . . or for more information check CP 3296 on handy form, pages 2 and 3.)

Highlights properties, uses for detergents, solvents

Various properties and applications are given for maker's two basically different alkyl aryl sodium sulfonate detergents (Udet and Udex), and also for a line of four different aromatic hydrocarbon detergents (Udesolve). Bul 55 is issued by Universal Detergents, Incorporated, Dept. CP, 1825 East Spring Street, Long Beach 6, California. When inquiring specify CP 3297 on handy form, pages 2 and 3.

Shows promise in synthesis of pyrimidines and anti-malarials . . .

diethyl ethoxymethylene malonate is now available in commercial quantities

Uses: Source for the ethoxymethylene group which is valuable in organic synthesis. It has been suggested as an intermediate in the synthesis of anti-malarials. A newer development involves its use in the synthesis of pyrimidines — a field of growing importance in organic chemistry.

Features: Available in commercial quantities.

Description: Diethyl ethoxymethylene malonate has developed from the pilot plant stage to the commercial production stage within the last 18 months at manufacturer's plant. It is available in 55 and 15 gal drums and also smaller containers. Manufacturer's tentative specifications call for a purity of 98% min and acidity of 0.2% max as acetic acid.

Other properties:

Boiling point, °C (with decomposition)	279-281
Specific gravity, 15°C/15°C	1.0855
Refractive index @ 20°/D	1.4625
Solubility in water	insoluble

REACTIONS

Reaction with ammonia. Amino-methylene malonic ester is produced by the reaction of EMME (synonym diethyl ethoxymethylene malonate) with concentrated ammonia.



ARMOUR CHEMICALS IN NEW STRIPPER SOLUTIONS AID IN FASTER, MORE UNIFORM REMOVAL OF GREASE, PAINT, ORGANIC COATINGS

By Dr. M. R. McCorkle, Technical Director, Armour Chemical Division

Recent development work by Armour chemists has resulted in three new coating stripper solutions which use Armeens® and Ethochemicals®—Armour's primary fatty amines and polyoxyethylene derivatives of high purity fatty acids. These strippers quickly and adequately remove dirt, grease, grime, paint and other types of organic coatings.

These stripper solutions can be re-circulated or re-used, since they remove coatings in sheets rather than by dissolving them. Thus the free films can be separated, leaving the solution clean for re-use. They are effective against all types of organic coatings, including phenolics, epons, urea-melamines, varnishes and coatings based on drying oils.

All three solutions are easy to prepare, and wash off readily with water. Often their use will cut cleaning time in half.

The first provides increased cleaning efficiency with a considerable reduction in the amount of caustic normally required. And the other two are made without caustic, for use in applications where the corrosive effect of caustic is objectionable, as on aluminum or tin surfaces.

Stripper #1	
Sodium hydroxide.....	10.0
Ethomeen C/25.....	.5
Water.....	89.5
	100.0

All ingredients can be added to the warm water, dissolved and put to work. The Ethomeen C/25 will tend to separate, and it is therefore desirable to keep the solution under agitation during metal cleaning operations. With agitation, cleaning is achieved in a minimum amount of time.

Solution A	Stripper #2	Stripper #3
Ethofat 242/60.....	.50	.15
Armeen C.....	10.00	3.00
Xylene.....	6.50	3.00

Solution B	
Glacial acetic acid.....	.50
Water.....	82.50
	100.00

© ARMOUR AND COMPANY



Heat Solution "A" with gentle warming until dissolved. Using good agitation, add Solution "B" slowly in a thin stream to Solution "A" (both heated to 150°F.). Resulting solution should be homogeneous.

In preparing Stripper #3, 20 parts of water should be used initially and then the resulting emulsion further diluted with the remaining water.

Stripper #2 is more expensive but its cost is offset by efficiency and time saved in removal of coatings. Stripper #3 is low in cost, stable, and has a low viscosity. Stripper #2 was effective against the following coatings in three minutes: varnish, alkyds, epon esters. It removed straight epon in 20 minutes. Stripper #3 removed the following coatings in five minutes: varnish, alkyds, epon esters. It required 45 minutes to clean straight epon coatings.

Send the coupon with your letterhead for free samples of the chemicals necessary to make up and try these stripper solutions in your own laboratory.

INERT, HIGH-MELTING ALIPHATIC KETONES USEFUL IN PROTECTIVE COATINGS, WAXES, ETC.

Stearone, Laurone and Oleone are a series of symmetrical higher molecular weight aliphatic ketones derived from their corresponding fatty acids. They are particularly inert and subject to only a few reactions under rigorous conditions. They have many new and different properties which should be of value to industry. Melt points vary from 28°C. for Oleone to 80°C. for Stearone.

The fact that these ketones are unaffected by high temperatures, acids, alkalis and other strong chemicals suggests a wide range of applications. They are compatible with such waxes as high-melting vegetable, microcrystalline and paraffins. They are also compatible with triglycerides and fatty acids. In 20% to 30% concentrations they form solid pastes at room temperatures with many solvents, such as

turpentine, ASTM naphtha, xylene and Stoddard solvent.

These three aliphatic ketones are insoluble in water and have essentially no water absorption. They are only slightly soluble in organic solvents at room temperature, although at elevated temperatures they are soluble to considerable degrees in several solvents.

Toxicity data on Stearone shows it to be non-toxic. Experimental animals have been fed Stearone in amounts as high as 10% of the diet with no harmful effects, and no indication of dermal toxicity was found. It is believed that Laurone and Oleone will show similar results when tests are complete.

The inert chemical nature of these fatty ketones, and their resistance to degradation by high temperatures suggests a number of applications, such as wax formulations.

Stearone in particular holds considerable promise as a partial or total substitute for the hard natural waxes such as candellilla or carnauba (at about one-half their price)! The low amount of hydrocarbon in Stearone makes it particularly attractive for evaluation in industrial wax formulations.

Stearone, Laurone and Oleone have shown promise in many other applications, such as resin lubricants and anti-blocking agents, flattening agents for paints, cosmetics, printing inks, waterproofing formulations, components in electrical insulations and in protective coatings of all types.

Technical Bulletin G-1 contains complete information on these three fatty ketones. Send the coupon with your letterhead for a free copy, and samples of the three chemicals.



CHEMICALS FOR SOAPS AND DETERGENTS

Armour's complete line of chemicals for the manufacture of soaps and synthetic detergents is covered in this free booklet. Particularly important are the facts about Armour's fractionally distilled high purity coconut fatty acids.

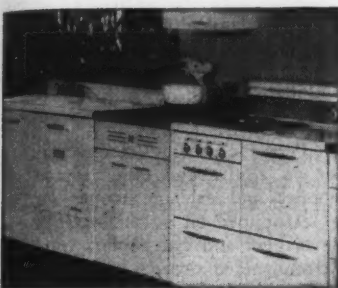
ASPHALT ADDITIVES

Anti-strip agents like Duomeen T and Redicote® are presented in this new booklet. These compounds can reduce costs and speed work in asphalt paving, whether new or patching. Send the coupon with your letterhead for your copy of this booklet.

ARMOUR CHEMICAL DIVISION

ARMOUR AND COMPANY • 1300 WEST 31ST STREET • CHICAGO 8, ILLINOIS

**NON-YELLOWING, LONGER LASTING
HIGH-BAKE ALKYD ENAMELS
MADE WITH NEO-FAT® 140**



Chemists of the Armour Protective Coatings Laboratory developed a new low-temperature solvent crystallization method for the production of high purity fatty acid materials. Neo-Fat 140, one of the chemicals produced by this method, is an improved unsaturated fatty acid raw material for the production of non-yellowing, faster drying, harder alkyd resin finishes, both air-dry and high-bake.

Neo-Fat 140 provides excellent non-yellowing characteristics for alkyds, whether pure white or pastel. It assures long life and continuing brilliance, despite attack by atmospheric fumes, soaps, synthetic detergents and grease. And Neo-Fat 140 gives you faster, more uniform processing time, so you can schedule more batches through your present equipment.

A titer of 5°C. max. means that Neo-Fat 140 can be exposed to temperatures as low as 39-40°F. without the slightest solidification. Thus, you can do away with the expense of hot storage rooms.

Higher iodine values (140-145) and low saturated fatty acid content yield more double bonds per gallon of fatty acids, giving better dry and harder alkyd resins. Neo-Fat 140 produces finishes with extremely good flexibility, even at 50°F.

Other specifications include an acid value of 197-202, unsaponifiable content of 0.5% maximum, and color, Lov. 5¼", 12R-12Y max. or Gardner, 1933 standards, 2 max. Average composition is 55% linoleic acid, 44% oleic, less than 1% linolenic max., and a trace of saturated acids.

Send the coupon with your letterhead for free samples of Neo-Fat 140, and also for your free copy of Technical Bulletin A-1, which contains complete technical data, including suggested formulations.

**STABLE, LIGHT COLOR DOUBLE PRESSED STEARIC
ACID AVAILABLE IN ARMOUR'S NEO-FAT 18-54**

In using double pressed stearic in the formulation of soaps, shampoos, cosmetics, shaving creams, freedom from discoloration and rancidity are extremely important—perhaps more important than any other characteristic. In Neo-Fat 18-54, Armour has developed a double pressed stearic acid which, according to all known heat stability tests, is the finest raw material available.

Storage time for the raw material, high temperature processing, shelf-life of the finished product—through all of these Neo-Fat 18-54 retains its good odor and light color, as do products made with it. Peroxide tests, which measure the amount of oxygen absorbed within a specific period of time, substantiate these odor stability claims.

To manufacturers of buffing compounds, emulsifying agents, metallic stearates, and

textile finishing agents, the stability of Neo-Fat 18-54 means not only longer shelf-life for their finished products, but uniform color which is retained throughout processing. As a result, color can be controlled from raw material through finished product.

Specifications include a titer of 53.9 to 54.4, iodine value of 7 maximum, acid value of 203 to 209, unsaponifiable content, 2.0% maximum, moisture 5% maximum, and color, Lovibond 5¼" cell, a maximum of 1.0R-10Y. The average composition runs 46% stearic, 48% palmitic and 6% oleic acids.

Send the coupon with your letterhead for free samples of this improved double pressed stearic for testing and evaluation. Your own laboratory tests will convince you of its merit. Neo-Fat 18-54 is available in 50-pound multi-wall bags.

INCREASE PRODUCTION OF HIGH-QUALITY GREASE WITH NEO-FAT 65

A double distilled animal fatty acid, Neo-Fat 65 is of a composition which for years has been recognized as advantageous for grease formulations. It is produced by the most modern methods, closely controlled to meet rigid specifications, assuring uniform composition and greater yield. Approximately 95 pounds of Neo-Fat 65 can be substituted for 100 pounds of neutral fat to obtain the same yield. And at least

two batches of soap made with Neo-Fat 65 can be run in the time required for one using glycerides. For these reasons, manufacturers can expand production without purchasing new equipment or expanding their plants. By using Neo-Fat 65, you get greater output of high quality grease—and the savings in production more than offset the slightly higher raw material cost. Send the coupon for free samples.

NEW SOLVENT CRYSTALLIZED OLEIC ACIDS



Ester-free, highly stable, oleic acids are the result of a new Armour Chemical Division process which utilizes a solvent which does not react with the raw materials. This new process, combined with Armour's low

temperature crystallization, assures you advantages not found in ordinary distilled or pressed oleic acids. The extremely low temperatures employed guarantee a substantially lower saturated fatty acid content than conventional types of oleic acids. These new products are characterized by bland odor and excellent heat stability.

Here are the 6 oleic acids: Low Titer Red Oil, 8-11° Red Oil, Saponified Red Oil, Low Titer White Oleic, 8-11° White Oleic, Commercially Pure Oleic.

All 6 of these acids are available in 55 gal. drums and 4000 and 8000 gallon aluminum tank cars. Send the coupon today for specifications and current price quotations.

MATERIALS

Reaction with hydroxylamine. 3-carbethoxy-4-isoxazolone is obtained by reacting hydroxylamine with EMME.

Reaction with urea derivatives. 2-substituted-5-carbethoxy-4-hydroxypyrimidine is obtained by reacting a urea derivative with EMME.

Reaction with resorcinol. Substituted coumarins are produced by the reaction of EMME with resorcinol.

Reaction with aniline. EMME has achieved importance in the synthesis of quinolines exhibiting anti-malarial activity by its reaction with substituted anilines.

Reaction with aminopyridines. EMME has been reacted with aminopyridines to produce naphthyridines which have been utilized in the synthesis of anti-malarials. EMME will, in some cases, cause dermatitis after contact with the skin. In case of contact, the affected area should be washed with alcohol, and then with soap and water. In case of contact with the eyes, prompt medical attention should be obtained.

(Diethyl ethoxymethylene malonate is a product of Kay-Fries Chemicals, Inc., Dept. CP, 180 Madison Ave., New York 16, N. Y. . . . or for more information check CP 3299 on handy Reader Service slip, pages two and three.)

**Extensive compatibility data
on plasticizer**

Manufacturer's 10-page bulletin describes his primary plasticizer, Santicizer 161. Feature of the publication is the extensive data presented on the material's compatibility with a number of the more common resins. Information is given on stability, solvent action, physical and chemical properties. A tabulation is also included of the physical properties of a vinyl film plasticized with Santicizer 161 and other commonly used plasticizers. Tech Bul 0-92 is issued by Monsanto Chemical Co., Organic Chemicals Division, Dept. CP, St. Louis 1, Mo. When inquiring specify CP 3300 on handy form, pages 2 and 3.

**Propylene glycol U.S.P.
'doubles' for glycerine**

Expanded production for propylene glycol U.S.P. is expected to relieve any tight supply situation which might develop in glycerine. Product will go into the same consuming fields as glycerine, and will be used as a replacement and extender for glycerine in many applications . . . solvent and humectant in the food and flavor industry, and as an emollient in creams, lotions, and liquid soaps.

Propylene glycol U.S.P. is non-toxic and relatively tasteless and odorless.

(Product of the Celanese Corporation of America, Dept. CP, 180 Madison Avenue, New York 16, New York . . . or for more information check CP 3301 on handy form, pages 2 and 3.)

Send samples: ☐ Ethofat 242/60, Armeen C, Ethomeen C/25 ☐ Neo-Fat 140
☐ Stearone, Laurone, Oleone ☐ Neo-Fat 65 ☐ Neo-Fat 18-54

Send literature: ☐ "Chemicals for Soaps & Detergents" ☐ Tech. Bull. A-1
☐ Oleic Acids specs. and prices ☐ Tech. Bull. G-1
☐ "Asphalt Additives"

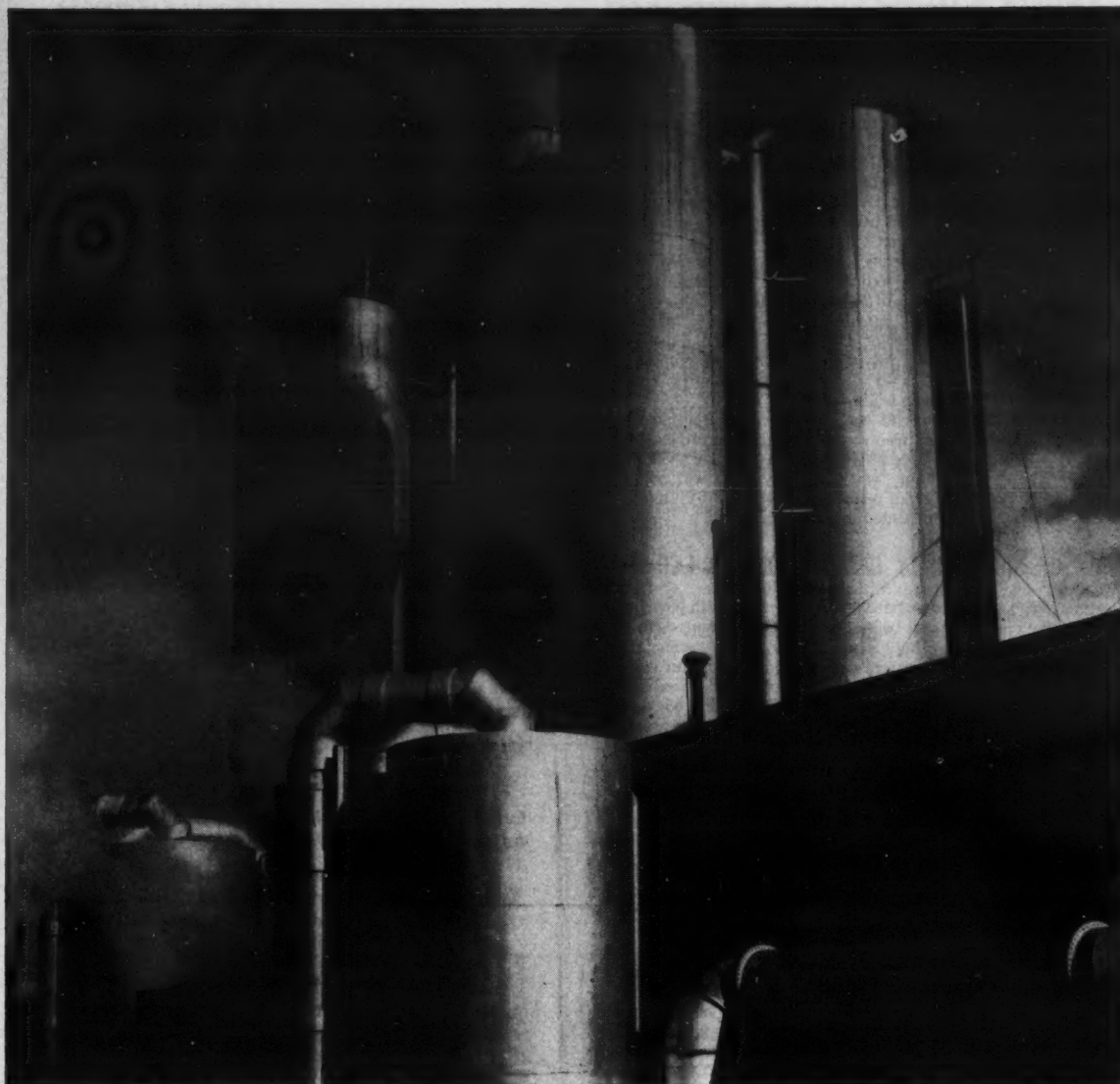
Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 3298 on handy form, pgs. 2-3



There's a special paint for places like this and it saves hundreds of dollars

When you get down to figuring how much it costs to paint a square foot of tank or stack, you find that the paint itself is only a small part of the cost. That's why experienced paint buyers select more quality aluminum paints for jobs like this than any other type.

Because so much aluminum paint is used for these places, special formulas have been developed. Paints made to these formulas stand up longer under heat, cold, sun, rain and the kind of corrosive fumes you find around mills and factories.

We don't make paint. But we make the Alcoa Aluminum Pigments that are used in more aluminum paints than any other brand. So we want to be sure that you get full value from the aluminum paint you buy. It's just good business for us.

If you have a plant, or a stack, or storage tanks, or

most anything else that needs paint that will last a long time, write us about your paint problem and we'll tell you what types of aluminum paints are best. We'll also send you a copy of *Painting with Aluminum*. It's packed with facts on selecting and using aluminum paints. Paint Service Bureau, Aluminum Company of America, 1790-J Alcoa Building, Pittsburgh 19, Pa.

Alcoa 
Aluminum

ALUMINUM COMPANY OF AMERICA

When inquiring check CP 3302 on handy form, pgs. 2-3

MATERIALS

Report very low toxicity for Ag-Insecticide

A technical grade of a new agricultural insecticide is currently being manufactured in limited quantities — 1,1-dichloro-2,2-bis (p-ethyl-phenyl) ethane. Product has been designated Perthane and an extremely low order of toxicity is reported.

Tests have shown that Perthane provides commercial control of leafhopper on alfalfa and other forage crops, spotted leafhopper and cabbage looper on lettuce, overwintering leafhopper on sugar beets in California, and apple maggot and red banded leaf-roller on apples. Recommended dosage for forage crops and low-growing field crops is one pound of active material per acre; for orchard crops, one pound per hundred gallons.

(Perthane will be offered to formulators as a dust base for preparation of finished dusts, and to distributors as wettable powder and emulsion concentrate by Rohm & Haas Company, Washington Square, Philadelphia 5, Pennsylvania . . . or for more information check CP 3303 on handy Reader Service slip, pages 2 and 3.)

Covers properties of carbon black in various rubber formulations

Published in both standard and metric versions, factual bulletin tabulates properties of manufacturer's FEF (Fast Extrusion Furnace) black, as compared with competitive products, in natural rubber, regular GR-S, low-temperature GR-S, Butyl, Hycar, and Neoprene (types GN and W). Characteristics compared include tensile strength; modulus at 200, 300 and 400 per cent; ultimate elongation; hardness, Shore instantaneous; rebound, Lupke; extrusion rate; mill shrinkage; Mooney plasticity; and Mooney scorch.

Bul 53-5 (standard) and 53-6 (metric version) are issued by Witco Chemical Co., Dept. CP, 260 Madison Ave., New York 16, N. Y. When inquiring specify CP 3304 on handy form, pages 2 and 3.

Imparts high reinforcement to synthetic rubbers . . .

new, synthetic white pigment of extremely fine particle size is a silico aluminate

Uses: White reinforcing pigment. Recipes are available on its use in sole compounds, and natural and synthetic rubbers. Studies are being carried out on its use in paints, certain resins, as a carrier for pesticides, and as a conditioning agent for table salt.

Features: Studies show that the pigment imparts high reinforcement to synthetic rubbers including several of the latest elastomers. Its reinforcing action in natural rubber is reportedly even more outstanding — producing very high tensile and tear resistance values and resistance to abrasive wear.

MATERIALS

A broad range of loadings produces a minimum change in properties with most polymers. This feature enables the compounder to make wider use of this versatile material.

Description: Zeolex 20 is a new synthetic white pigment of extremely fine particle size. Chemically, it can be described as microlitic zeolite — a silico aluminate. Being chemically different from pigments now offered, the compounder may find it necessary to make minor changes in formulation to benefit from its inherent properties.

Generally speaking Zeolex 20 does not retard rate of cure to the extent of other finely divided non-black pigments. This means that acceleration type and level must be adjusted accordingly. In many cases the faster cure rate will permit reductions in curing cycles or accelerator levels, or both.

It has been found that, with Zeolex 20, the free moisture level is not critical as regards dispersion characteristics. In fact, dispersion is improved by its relatively low free moisture. The storage stability of Zeolex 20 is good.

Data indicate that a wide range of commercial accelerators can be used successfully. It also appears that lower sulfur levels warrant consideration.

Physical Properties

Color	white
Form	dry powder
Handling precautions	none — non-toxic
Specific gravity	2.2
Screen residue (325 mesh), %	0.1 max
pH	9.5-10.5
Moisture, %	5 max
Ignition loss (dry basis), %	13-15
Oil absorption, cc/100gm	106
Particle size, microns	.01-.05

(Offered by J. M. Huber Corp., Dept. CP, 100 Park Ave., New York 17, N. Y. . . . or for more information check CP 3305 on handy Reader Service slip, pages two and three.)

Gives detailed info on formulation of cosmetics, pharmaceuticals

Eighty-eight page manual includes cosmetic formulations such as oil-in-water emulsions, water-in-oil emulsions, pastes, molded products and protective creams. Also covered are typical drug formulas: ointments and ointment bases, transparent emulsions, elixirs and cough syrups.

Properties and advantages of manufacturer's polyhydric alcohols, fatty acids, and surface active agents are discussed relative to their use in the above formulations. The time-saving hydrophilic-lipophile system of emulsifier selection is outlined. Five pages of tabular data augment the section on emulsifier selection.

Bul CD-72 is available to cosmetic and pharmaceutical manufacturing and research executives on letterhead request to Industrial Chemicals Dept., Atlas Powder Co., Dept. CP, Wilmington 99, Del. To others, the bulletin is priced at \$2.00 per copy.

Jefferson for highest-quality

MONOETHANOLAMINE

DIETHANOLAMINE

TRIETHANOLAMINE

Available immediately in tank cars and 55-gallon drums, or in samples for your preliminary investigations. (Address inquiries to Department D.)

Produced by specialists in "essential chemicals from hydrocarbon sources."

Styrene Glycol
Styrene Glycol
Styrene Glycol
Diethylene Glycol
Monomethanolamine
Diethanolamine
Triethanolamine
Methyl Phenol
Morpholine
Ethylene Carbonate
Propylene Carbonate
Diethylmethanolamine
Diisopropylmethanolamine

Jefferson

CHEMICAL COMPANY, INC.

260 MADISON AVENUE, NEW YORK 16, N. Y.

Branch Sales Offices: 120 West Washington St., Chicago 2, Ill.; 200 California Building, Houston 2, Texas
Sales agents: Nelson A. Howard, Jr., 1000 Wilshire Boulevard, Los Angeles 24, California
Wholesale Sales: Tinsley, New Jersey; Chicago, Illinois; Houston, Texas

Briefs

From recent literature

No. 4 in a Series

Corrosion of steel by natural oil field brines containing hydrogen sulfide has been reduced in tests by the addition of corrosion inhibitors including the reaction product of diethanolamine and formaldehyde, and the reaction product of monoethanolamine and formaldehyde. The concentration of the inhibitors in the tests was 62½ ppm.

Thermo-plastic synthetic polymers which are free flowing, have a high dry solid content, stability on standing, and which, upon evaporation, yield a continuous tough and adherent film with a low degree of opacity free from hydrophilic colloids may be prepared by employing an emulsifying agent such as the ethanolamine salt of a sulphate of a fatty alcohol. The emulsifying agent is used in conjunction with a stabilizer and a surface tension reducer in dispersing the monomeric substance in an aqueous medium.

Textile lubricant suitable for use as a single application lubricant for cellulose acetate staple fibers and similar cellulose materials consists of a partial ester of phosphoric acid with a long chain aliphatic acid, an ethanolamine, such as diethanolamine or triethanolamine, an alkylolamine ester of a long chain aliphatic acid, and an alkyl phenol all mixed into mineral oil in suitable proportions.

Silver containing germicides which are water-soluble, non-toxic and non-staining can be prepared for use in ointments, unguents, etc., or for incorporation in latex products, bristles, textiles, resins, etc., to make them essentially self-sterilizing. The germicide can be prepared by reacting silver chloride with monoethanolamine.

These developments are abstracted from recent publications or U.S. patents. They may suggest applications of Jefferson Ethanolamines in your products or processes.

When inquiring check CP 3306 on handy form, pgs. 2-3

THE TETRINES

New Glyco Products To Complex Trace Metals

Used in the Production of

Soaps
Detergents
Agricultural Chemicals
Cosmetics
Shampoos
Germicides
Latex
Laundry Compounds
Leather
Metal Finishes
Photo Solutions
Pigments
Pulp and Paper
Emulsion Paints
Textiles
Rubberized Fabrics

The Tetrines

Tetrine Acid (99%+ Active)
Tetrasodium Tetrine
Tetrasodium Tetrine 50
Tetrasodium Tetrine 25
Sodium Tetrine Liquid (26% Active)
Sodium Tetrine Liquid Conc. (39% Active)
Trisodium Tetrine
Disodium Tetrine

Now Glyco is producing the Tetrines—ethylene diamine tetraacetic acid and salts—at its new plant at Williamsport, Pa. Containing the most modern equipment, this up-to-date plant is geared to supply your growing requirements for metallic ion sequestering agents.

Trace metal contaminants create processing difficulties and/or product impairment in every industry using process water. The ability of the Tetrines to chelate, or sequester, or complex di- and tri-valent metallic ions results in excellent control of contaminants in the many industries listed here. The Tetrines are stable to storage and to all temperatures and pH's encountered—effective in high concentrations and extreme dilutions of metallic ions.

Your inquiries for further information will receive our prompt and complete attention.

GLYCO



PRODUCTS CO., INC.

26 Court Street,
Brooklyn 1, N. Y.

When inquiring check CP 3307 on handy form, pgs. 2-3

MATERIALS

Half anilide potentially useful for variety of syntheses...

trial-lot chemical undergoes reactions at carboxyl group, double bond and amide linkage

Uses: *Polymeric Products*—product has been used in conjunction with other monomers such as acrylonitrile and vinyl acetate to produce thermoplastic polymers. The products are said to be useful in conventional wet-spinning processes for the preparation of synthetic fibers which have good dyeability, strength and elasticity. Films and molded objects also can be made from these polymers.

It is suggested that the compound be evaluated for the modification of many types of polymers. Its amide group and carboxyl group are points at which the polymers themselves may have reactivity for salt formation, cross-linking or other reactions.

Pest Control—certain derivatives of compound such as the imide and the dehydrated Diels-Alder addition product with cyclopentadiene are said to be active for the control of flies and other pests. These imides may be used to replace up to 90% of the pyrethrum in typical fly sprays without reducing the killing or paralyzing effect of the spray.

Features: Reactivity at the carboxyl group, the double bond and the amide linkage should make compound a versatile intermediate for a variety of chemical syntheses.

Description: N-Phenylmaleamic acid (maleanilic acid) is being offered in trial-lot quantities. It is a stable half anilide under normal conditions; from polarographic measurements, there is some evidence of slow hydrolysis in very dilute aqueous acid solution. Physical properties determined by manufacturer:

Appearance	yellow cryst. solid
Molecular weight	191.18
Melting point, °C	190 ± 2
Apparent density, gm/cc @30°C	1.418
Solubility @27°C, gm/100 ml	

Acetonitrile	0.2
Acetone	0.3
Benzene	<0.1
Butyl Cellosolve	1.1
Carbon tetrachloride	<0.1
Chloroform	<0.1
Dimethylformamide	12.9
Dioxane	0.9
Ethanol	0.2
Ether	<0.1
Methanol	0.3
Toluene	<0.1
Water	<0.1

Reactions

Salt Formation—N-phenylmaleamic acid forms salts easily with various bases.

Amide Formation—it is reported that the treatment of N-phenylmaleamic acid with phosphorus oxychloride leads to the formation of an addition compound which decomposes in water to give N,N'-diphenylmaleamide as one of the products. Some of this product is also reported to form when the acid is treated with acetyl chloride.



GAIN MORE POUNDS
OF PRODUCT-FASTER
with

SOLKA-FLOC

Faster, greater production per man hour can be yours using SOLKA-FLOC. Being the newest and most modern form of cellulose, SOLKA-FLOC is ideally suited for use with modern machinery. And because of its *unusually high density*, free-flowing SOLKA-FLOC allows you to handle more alkali cellulose in your process than do other forms of cellulose.

Far faster reaction and easier handling are other advantages you'll find in SOLKA-FLOC.

Find out more about this versatile product and how it can help you produce up to 50% more. Write for information and samples to Dept. FB-9 at Boston.

Prompt shipment guaranteed—pounds to carloads.

BROWN



COMPANY, Berlin, New Hampshire
CORPORATION, La Tuque, Quebec

General Sales Offices:
150 Causeway Street, Boston 14, Mass.
Dominion Square Bldg., Montreal, Quebec

SOLKA & CELLULOSE PULPS • SOLKA-FLOC •
NIBROC PAPERS • NIBROC TOWELS • NIBROC
KOWTOWLS • NIBROC TOILET TISSUE •
BERMICO SEWER PIPE, CONDUIT & CORES •
ONCO INSOLES • CHEMICALS

When inquiring check CP 3308
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Dehydration—the acid reacts with a number of dehydrating agents to give N-phenylmaleimide. Agents such as acetic anhydride with fused sodium acetate, thionyl chloride, phosphorus tribromide, phosphorus oxychloride and acetyl chloride have been used for this reaction.

Addition Reactions—as well as those compounds noted above which dehydrate the acid and add to the double bond at the same time, reagents such as bromine and hydrogen chloride are expected to react with the ethylene linkage. Diethyl dithiophosphoric acid, for example, adds to the acid to give the substituted dithiophosphate.

Diels-Alder Reactions—N-phenylmaleamic acid behaves as a dienophile in typical Diels-Alder reactions. The reaction with cyclopentadiene, for example, gives the expected bicyclic product, N-phenyl-3,6-endomethylene-Δ-tetrahydrophthalamic acid.

(Offered by American Cyanamid Co., New Product Development Dept., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . check CP 3309 on handy form, pages 2 and 3.)

Report increased use of wood preservatives

According to a preliminary report issued by the Forest Service of the U. S. Department of Agriculture, the amount of wood materials treated with preservatives increased 3% during the past year. Information contained in the report is based upon reports from 278 wood treating plants in 42 states, representing 95% of the capacity of the industry.

Included are tables showing breakdown of the classes of timber treated by the preservative used, species and method of treatment, and the amount treated in each region. Report is issued by the Division of Forest Economics, Forest Service, U.S. Department of Agriculture, Washington 25, D. C.

To foster studies of radiation exposure, detoxification

S-Acetyl glutathione, being supplied in research and laboratory lots as a chromatographically pure grade, is said to be an important tool for biochemical studies of transacetylation and energy transfer in cell metabolism. Because the product is related to glutathione, it is expected to be of value in studies of detoxification, radiation exposure, etc.

Manufacturer reports that the high energy level stored in this physiological form of glutathione can be made available by splitting the bond between the acetyl group and the glutathione molecule. The biochemical energy thus released is about 10,000 calories per mole. S-Acetyl glutathione is said to have excellent stability.

(Product of Schwarz Laboratories, Incorporated, Dept. CP, 230 Washington Street, Mount Vernon, New York . . . check CP 3310, pages 2 and 3.)

let this be your guide



Acintol Tall Oil products are specially processed for a wide range of applications.

ACINTOL C . . . a high quality crude tall oil.

ACINTOL D & DLR . . . distilled and fractionated tall oils, light in color and uniform in composition.

ACINTOL FA-1 . . . an economical tall oil fatty acid.

ACINTOL FA-2 . . . the outstanding tall oil fatty acid with low unsaps and low rosin.

ACINTOL R . . . the highest quality tall oil rosin available commercially (as defined by the Naval Stores Act, Sec. 160.305).

ACINTOL P . . . a semi-fluid tall oil pitch of excellent quality and constant composition.

Made by specialists in the tall oil field, Acintol Tall Oil products offer you the **QUALITY** and **ECONOMY** which only specialization can produce.

To get your copy immediately, fill out and return the coupon today.

ARIZONA CHEMICAL COMPANY

30 Rockefeller Plaza, New York 20, N. Y.

...the Acintol Tall Oil story

Tall oil is playing an increasingly important part in the processing industries.

To help you realize its full potential, we have just published a new comprehensive manual on tall oil and Acintol Tall Oil Products.

It includes:

- the history of tall oil developments from initial experiments in 1905 up to the present.
- information on the manufacture and chemistry of tall oil products.
- detailed analysis of every Acintol Tall Oil Product and discussion of some of their present and future applications.

Whether you are now using Acintol Tall Oil Products or not, this new manual can help you increase processing efficiency and improve product quality.

ARIZONA CHEMICAL COMPANY
30 Rockefeller Plaza, New York 20, N. Y.

CP-9

Please send me a copy of your new manual on tall oil and Acintol Tall Oil Products.

Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____

When inquiring check CP 3311 on handy form, pgs. 2-3



like a hunting hound...

...Versene®

TRACEMETAL TRACKERS

No hound can ever be quite so selective in its hunting methods as the Versenes. These powerful Chelants track down traces of any metal in a liquid. They then chelate, complex or sequester them so that they can no longer run wild and affect or otherwise interfere with chemical reactions, processes or products.

CHEMICALS OF CONTROL

The characteristics of the Versenes make them chemistry's most precise chemicals. Because they give preferential mole-for-mole control over metallic ion contaminants in solution, they put powerful new weapons into your hands. With them and the new chemistry of chelation you can hunt down, attack and destroy the unseen metal ion enemies that constantly upset the most careful calculations and spoil so many formulas, formulations, products and processes.

QUALITY GUARANTEED

Extremely stable at high temperatures throughout the pH range, the quality and complexing power of the Versenes is guaranteed in either sample or carload lots. Versenes are made only by the Bersworth Chemical Company under processes originated, developed and patented by F. C. Bersworth. Use them wherever metallic ions are giving trouble. Write Dept. X. Ask for Technical Bulletin No. 2 and samples. Chemical counsel available.

VERSENE WATER TEST KIT. Tells total hardness in two minutes. Accurate to one gr. per gallon. Complete with instructions. \$5.00 postpaid.



Chemistry's most precise chemicals

BERSWORTH CHEMICAL CO.

FRAMINGHAM, MASSACHUSETTS

Chas. S. Tanner Co.
Liberty Life Bldg.
Charlotte, N. C.
Kraft Chemical Co., Inc.
917 West 18th Street
Chicago 8, Illinois

Braun-Knecht-Heimann Co.
San Francisco, California

WAREHOUSE STOCKS

Siegel Chemical Co.
One Hanson Place
Brooklyn 1, New York
George Mann & Co., Inc.
251 Fox Point Boulevard
Providence, Rhode Island

WEST COAST AGENTS
Van Waters & Rogers, Inc.
Seattle, Wash. & Portland, Ore.

Wasatch Chemical Company
2225 South Fifth East
Salt Lake City, Utah
Barada & Page, Inc.
Houston, Dallas, Corpus Christi,
New Orleans, St. Louis, Wichita,
Oklahoma City, Tulsa, Kansas City, Mo.

Braun Corporation
Los Angeles, California

When inquiring check CP 3312 on handy form, pgs. 2-3

MATERIALS

Good starting point for choline derivatives

Uses: Suggested as an intermediate for other choline salts, and also as a latent catalyst for resins and other processes where it is desired to release a strong base by the application of heat. A technical grade product, it is not recommended as a drug.

Features: 2-Hydroxyethyltrimethylammonium bicarbonate is currently being offered as a 45% aqueous solution.

Description: This choline salt is a colorless liquid freezing at -21.3°C . Molecular weight is 165.88, specific gravity 1.0965 ($25/4^{\circ}\text{C}$), pounds per gallon 9.15 at 68°F , refractive index $n_{25/D}$ 1.3967, and viscosity 3.50 cp at 25°C . Following specifications have been set for the product:

Concentration	44.0-46.0% by wt
Specific gravity $25/25^{\circ}\text{C}$	1.098-1.101
Color	25 APHA max
Residue on ignition	0.01% max
Sediment	none
pH	11.0 max
Iron	0.005% max

(Product of Commercial Solvents Corporation, Dept. CP, 260 Madison Avenue, New York 16, New York... or for more information check CP 3313 on handy form, pages 2 and 3.)

ASTM standards on plastics listed in factual bulletin

Listed in 705-page bulletin are 135 standards for plastics, including specifications, definitions and tests for a wide range of materials. The 27 specifications cover such molding compounds as phenolics, melamines, ureas, cellulose, acetates, vinyl chloride, methacrylate, and materials made from these compounds in the form of sheets, rods, tubes and shapes. Also included in bulletin are test methods for measuring properties ranging from strength and hardness to optical and permanence characteristics.

To obtain "ASTM Standards on Plastics" remit \$5.25 direct to American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Moisture control, plasticizing go hand-in-hand...

plasticizer is non-toxic, non-corrosive and non-volatile in nature

Uses: Plasticizer for paper stocks, rubber latices, fibers, glues, and starches.

Features: Plasticizer is hygroscopic in nature, thus maintains an even moisture control in finished product. For example, when used in the tubbing of paper, the finished paper is said to show a high level of moisture equilibrium. In addition, the paper is soft and flexible and has high tear strength due to plasticizing effect on the fiber.

SPECIFY
EL DORADO

**COCONUT OIL
FATTY ACIDS**

FOR

**PURITY
UNIFORMITY
SERVICE**

SERVICE ON DELIVERIES

Your order... whether a tank car or a drum... reaches you *when you want it*. El Dorado keeps stocks in New York, Chicago and San Francisco areas... ready to go when you want service. And El Dorado is geared to meet short deadlines.

SERVICE ON INFORMATION

What do you want to know about coconut oil fatty acids? Specifications? Availability? Market information? Costs? Shipping information? How to get better processing results? Ask El Dorado.

WRITE OR CALL:

IN THE ATLANTIC STATES:

H. Reisman Co.
27 William Street
New York, N. Y.

IN THE MID-WEST:

Arthur C. Trask & Sons
4103 South LaSalle Street
Chicago, Ill.

IN THE WEST:

El Dorado Oil Works
311 California Street
San Francisco, Calif.

FATTY ACIDS

Coconut • Caprylic • Capric • Lauric
Myristic • Palmitic • Eldhyco

METHYL ESTERS

Caproate • Caprylate • Caprate • Laurate
Myristate • Palmitate • Coconate • Eldo 18

FOR SAMPLES AND INFORMATION,
WRITE DEPT. P.

EL DORADO
OIL WORKS

311 California Street
San Francisco, Calif.

Plants in Bayonne, N. J.,
and Oakland, Calif.

When inquiring check CP 3314
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

Description: Retane is a poly-alcohol furnished at 70% solids in water. Manufacturer reports that its non-volatility allows its use within temperature ranges that would normally volatilize most conventional materials. Product is non-corrosive and non-toxic.

(Retane is a product of Bonner Chemicals, Incorporated, Dept. CP, 31 Spruce Street, Leominster, Massachusetts . . . or for more information check CP 3315 on handy form, pages 2 and 3.)

Function of and facts on emulsion stabilizers

Stability can be imparted to oil-in-water emulsions through the use of a group of lignosulfonate surfactants which differ from conventional emulsifiers in that they have little effect on interfacial tensions. Tradenamed Marasperse, they are the subject of a bulletin which describes the manner in which they function and the advantages inherent in their use. Bul 119 is issued by Marathon Corp., Chemical Division, Dept. CP, Rothschild, Wis. When inquiring specify CP 3316 on handy form, pages 2 and 3.

Permanent magnet — it's ceramic

A ceramic, permanent magnetic material is announced which can be fabricated by powder metallurgy methods into a wide variety of intricate shapes. Cromag, as it is designated, is said to be ideal for use where it is subjected to high demagnetizing fields. This is due to its high coercive force. In high frequency applications, it is said to show a very low loss and minimum proximity effect on associated circuitry.

Cromag can be supplied in long rods, tubes, square, rectangular, or other symmetrical shapes.

(Product of Henry L. Crowley & Company, Incorporated, Dept. CP, West Orange, New Jersey . . . check CP 3317 on handy form, pages 2 and 3.)

Presents prices on over 300 monomers and polymers

Specializing in the preparation of research quantities of allyl and diallyl esters, acrylates and methacrylates, vinyl esters, manufacturer has issued a 12-page catalog which gives prices on his available list of some 300 monomers and polymers. Although normally offering research quantities, publication states that facilities are able to turn out commercial quantities where there is sufficient interest.

A special listing at end of catalog includes catalysts and accelerators, cross-linking agents, monomers for polyelectrolytes and substituted ethylenimines. Cat A-5 is issued by Monomer-Polymer Inc., Dept. CP, Leominster, Mass. When inquiring specify CP 3318 on handy form, pages 2 and 3.



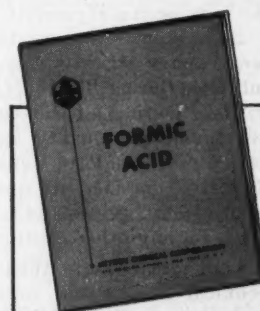
Heyden SODIUM FORMATE-- a consistently high quality, uniform product used extensively in the leather, paper, textile and chemical industries—is now packaged in easy-to-handle 50 lb. multiwall paper bags, convenient to store and transport. It is available also in 300 lb. water-proofed fiber drums, on request.

Heyden FORMIC ACID (90% and 85%), as a top quality raw material, is helping to make better products in the chemical, pharmaceutical, textile, paper, leather and other industries. It is shipped in 125 lb. carboys and 525 lb. stainless steel drums.

Rely on Heyden Formic Acid and Sodium Formate to meet your most exacting specifications. Count on Heyden as your source of supply.

HEYDEN CHEMICAL CORPORATION
342 Madison Avenue, New York, N. Y.

CHICAGO • CINCINNATI • DETROIT • PHILADELPHIA • PROVIDENCE • SAN FRANCISCO



Write for your copy of the new Heyden Technical Bulletin on Formic Acid.

When inquiring check CP 3319 on handy form, pgs. 2-3



Dependable Source of Chemical Raw Materials



J. F. McCarty, president, Cold Spring Bleachery

"Wyandotte Technical Service saved us 18% annually," says J. F. McCarty, Cold Spring Bleachery

"We have been a Wyandotte Caustic Soda user for more than 40 years," states Mr. McCarty, president, Cold Spring Bleachery, Yardley, Pa. "During all this time, we have found the quality and uniformity of Wyandotte Caustic excellent . . . in fact, its quality is so consistent, we wouldn't take a chance on any other caustic!"

"Another thing, Wyandotte Technical Service has been very co-operative and helpful. On their recommendation, we recently switched over to liquid caustic. Much to our amazement, we find that at current requirements this change has effected a savings of 18% annually in our costs for caustic. We are doubly pleased because

the changeover has removed caustic handling hazards—a big safety factor.

"Naturally, the Wyandotte representative is always welcome at our plant, and we're proud to say Wyandotte chemicals play an important part in the services we perform for our customers in furnishing DELA-SET and DELA-SHRUNK finishes for fabrics."

Send for Wyandotte's helpful new 56-page book on Caustic Soda. It contains data on grades best suited for your requirements—whether for rayon, pulp and paper, soap and syndets, textiles, chemicals, oil and lubricants, paints, dyes, metals. It also gives complete data on manufacturing processes, purity,

analytical methods, and contains tables and charts on chemical reactions. It's free for the asking! Write to Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.



HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine
Calcium Carbonate • Calcium Chloride • Glycols • Synthetic
Detergents • Agricultural Insecticides • Soil Conditioners
Other Organic and Inorganic Chemicals

MATERIALS

Announce phosphates available abroad

A fertilizer-grade triple superphosphate is being produced abroad and shipped f.o.b. Genoa, Italy. Producer reports availability of about 3000 tons per month. Analysis is shown as follows:

P ₂ O ₅	42-45%
CaO	26-29%
MgO	0.4%
CO ₂ , fluorides, hydrated water	6-9%
Moisture	12.6%
Organic matter	8%

Another phosphate — tricalcium phosphate — is being produced overseas and shipped f.o.b. through Egypt.

(Further particulars may be had from International Processes Incorporated, Dept. CP, 624 South Michigan Avenue, Chicago, Illinois.)

Announce the perfection of gemstone, optical grade of strontium titanate

Successful conclusion of a long search for a completely water-white material with a high refractive index and suitable for gemstone and optical uses has resulted in single crystals of strontium titanate, made by flame fusion process.

Jewelry cut from the new material looks very white and brilliant — similar to that of the diamond. Hardness is said to be comparable to that of jade.

Production of strontium titanate boules is now underway and will soon reach commercial scale. Manufacturers and designers of lenses, prisms, and other types of optical equipment should be the ones mainly interested.

(Developed by the National Lead Company's Titanium Division, Dept. CP, at Sayreville, N. J.)

Radioactivity analysis determines protective qualities, wear of car polish . . .

washing tests on tagged samples show wear results on various finishes

Use of a radioactive isotope — Cobalt 60 — solved the problem of determining the comparative wearing and protective qualities of car polishes on various automobile finishes. Cobalt-60 was used to tag a new liquid silicone car polish of the Cannon Chemical Company and a competitive hard wax polish. Tagged samples were then subjected to a number of washing tests.

Cobalt-60 was selected because it has long half-life, is relatively inexpensive, emits high-energy gamma rays, and is easily measured by regular counting techniques. More important, cobalt as cobalt naphthenate is an oily substance which could be homogeneously incorporated into the two polishes.

Briefly, procedure followed was to apply tagged polishes to a number of 1" steel discs painted with

When inquiring check CP 3320 on handy form, pgs. 2-3

various automobile finishes. Polishes were applied according to directions given on containers. Samples were then subjected to a number of washes with tap water, soap and water, hydrocarbon solvent similar to gasoline, and other cleaning agents. After each wash a gamma count was carried out to determine the amount of residual radioactivity.

Geiger-Mueller Tube was one instrument used to count the radioactivity from the samples. Same geometry was maintained between all samples and the Geiger-Mueller Tube so that comparable results could be obtained.

(Test process and information courtesy of Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass.)

Humectant shows promise as catalyst deactivator for pesticide formulations

Extensive laboratory investigations by manufacturer have shown that Maracarb N humectant shows considerable promise in nullifying catalytic action in pesticide powders and dusts, thus prolonging shelf life of these toxicants. It is a known fact that agricultural chemicals such as chlorinated hydrocarbons are susceptible to decomposition either during or after formulation. Often this decomposition is attributable to the so-called catalytic activity of the carrier or diluent used in the formulation.

Maracarb N is a liquid product with approximately 50% solids content.

(Laboratory and pilot plant quantities are available from Chemical Division of Marathon Corporation, Dept. CP, Rothschild, Wisconsin . . . or for more information check CP 3321 on handy form, pages 2 and 3.)

Pilot plant samples of new plasticizer available

Uses: Polymeric type plasticizer for vinyls — flexible sheeting, flexible film, plastisol and organosol dispersions, and molding and extrusion compounds. Currently being employed in such items as shower curtains, floor coverings, protective coatings, wire and cable coatings, and tubing.

Features: Following attributes are reported for the plasticizer: non-volatility . . . low extractability . . . excellent mill behavior . . . good low-temperature flexibility . . . good resistance to ultraviolet light and heat . . . and low viscosity.

Description: Plasticizer is an epoxydized soybean derivative that is odorless and light colored. Pilot plant samples are currently available for evaluation work.

(Product of Acher-Daniels-Midland Company, Dept. CP, 600 Roanoke Building, Minneapolis 2, Minnesota . . . or for more information check CP 3322 on handy form, pages 2 and 3.)

for profitable, economical

TEXTILE SIZES

TEXTILE FINISHES

PAPER SIZES

BINDERS

OIL AND GREASE

RESISTANT PAPERS

COSMETIC PREPARATIONS

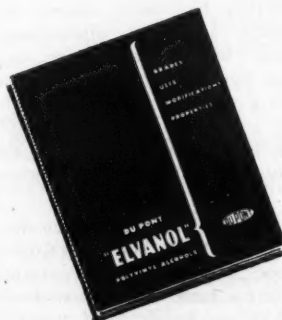
EMULSIFIERS

THICKENERS

Here are a few of the many profitable applications already found for versatile "Elvanol"—a water-soluble, thermoplastic resin. By putting the valuable properties of "Elvanol" to work, many manufacturers have made important improvements in their products or processing techniques.

So that you may see what "Elvanol" can do for your product, we offer you—free—a 44-page book fully describing its properties and applications. And if the many possibilities of "Elvanol" suggest some profitable applications to you, we will be glad to provide you with a working sample. No obligation, of course. Just call or write to:

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept., Wilmington 98, Del.



TRY ELVANOL®

POLYVINYL ALCOHOL

Put these properties of "Elvanol" to work for you:

WATER-SOLUBLE—dissolves easily in water, eliminating need for expensive organic solvents:

RESISTANT TO OILS, GREASE, SOLVENTS—unaffected by contact with vegetable oils, greases and petroleum hydrocarbons. High degree of impermeability to such gases as oxygen, nitrogen, hydrogen, and carbon monoxide.

STRONG AND FLEXIBLE—resists tearing and abrasion. Stable to sunlight and artificial light. Properties may be varied with plasticizers.

EASILY MODIFIED with plasticizers, extenders, gelling agents, colors, flame-retardants, etc.

AVAILABLE IN SEVERAL GRADES—each with different physical properties to meet various industrial requirements. Let us know what specific application you have in mind, and we will be glad to help you develop suitable formulations.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

MAIL THIS COUPON FOR YOUR COPY

I am interested in the advantages of "Elvanol" for use in:

- ☐ Textile Sizes
- ☐ Textile Finishes
- ☐ Paper Sizes
- ☐ Binders
- ☐ Oil and Grease Resistant Papers
- ☐ Cosmetic Preparations
- ☐ Emulsifier Thickeners

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept., Wilmington 98, Del.

CP-9

Please send me your free book containing full information about Du Pont "Elvanol" polyvinyl alcohols.

Name _____ Position _____

Firm _____

Address _____

City _____ State _____

When inquiring check CP 3323 on handy form, pgs. 2-3

STEPAN CHEMICAL COMPANY

NEW FATTY ALCOHOLS

and fatty alcohol sulfates

These new Stepan higher fatty alcohols, called Makanols, from tallow, soya, fish and linseed oils lend themselves to a wide range of applications including the suggested uses below.

SULFATES of these Makanols are also available in a variety of forms as sodium salts or alkylamine salts. Their excellent detergency and low defatting of the skin makes them ideal for use in shampoos, heavy-duty household detergents and other detergents in either liquid or solid forms.

Both the primary Stepan Makanols and their sulfates are available in commercial quantities based on semi-works unit production.

TENTATIVE SPECIFICATIONS

	% Myristyl Alcohol	% Cetyl Alcohol	% Stearyl Alcohol	% Oleyl Alcohol	% Linoleyl Alcohol	Iodine No.	Saponifi- cation Value	Titre
MAKANOL I	6	27	15	50	2	55	2	42
MAKANOL II	6	27	67	4	2	52

SUGGESTED USES

Emulsions
Emulsifiers
Oil Additives
Chemical Intermediates
Esters
Plasticizers
Mold Release Agents
Rust Preventatives
Textile Finings

Leather Stuffing
Resins
Metal Plating
Wax Compounding
Wetting Agents
and Detergents
Lubricants
Emulsion Stabilizers
Adherents in Cosmetics

Write for free Samples...

THE STEPAN

CHEMICAL CO.
2250 So. Kedzie Ave. • Chicago 23, Ill.

When inquiring check CP 3324 on handy form, pgs. 2-3

MATERIALS

3 high-MW ketones being offered as samples

Three high molecular weight unsymmetrical ketones are now available in experimental quantities — methyl heptadecyl, methyl undecyl, and methyl heptyl. All are made synthetically from fatty acids. Other members of the series may be added to these at a later date.

Utility is expected to extend to the following fields: chemical intermediates, solvents, lubricants, and plasticizers.

(Sample quantities are available from Armour and Company, Research Div., Dept. CP, Chicago 9, Illinois . . . or for more information check CP 3325 on handy form, pages 2 and 3.)

Another source for 2,4,5-T

Another supplier of 2,4,5-T — the highly effective hormone type herbicide for mesquite, poison ivy, and other unwanted woody plants — has started commercial production. Ethyl Corporation is producing it as the acid (2,4,5-trichlorophenoxyacetic) and as the butoxy-ethoxy-propanol ester for formulation of low-volatile ester formulations.

Company also makes benzene hexachloride insecticide (BHC), and is currently completing a new plant for Lindane.

(Announced by Ethyl Corporation, Dept. CP, 100 Park Ave., New York 17, N. Y. . . or for more information check CP 3326 on handy form, pages 2 and 3.)

Begin producing coenzyme ADP

Production has been started on coenzyme adenosine diphosphate (soluble sodium salt). Ion exchange purification is employed to obtain a uniform product of high purity — containing over 95% of ADP. The product is said to be chromatographically homogeneous. Form is a dry powder.

(Product of Pabst Laboratories, Dept. CP, 1037 West McKinley Avenue, Milwaukee 3, Wisconsin . . . or for more information check CP 3327 on handy form, pages 2 and 3.)

Get more use out of existing drums



WITH UNICHROME DRUM LININGS

you can use existing steel containers to ship a wide range of chemical or edible products without corrosion or contamination. They keep drum interiors in such good condition that often it's also possible to re-use the drum. A number of types available, including:

(1) Unichrome Series B-124 Linings are recognized as outstanding improvements to the already dependable family of phenolic coatings. (2) When lined with a Unichrome Series 4000 Plastisol Lining, ordinary steel drums get such protection they can sometimes be used in place of stainless. (3) Vinyl-base Unichrome Series B-154 Linings withstand many products which are strongly corrosive to containers and which attack ordinary coatings. Write us about your requirements.



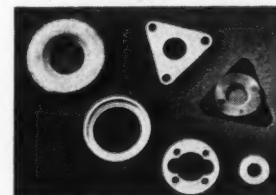
COATINGS FOR METALS

Products of UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y. • Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 3328 on handy form, pgs. 2-3

LOOK AT THESE PROPERTIES OF DU PONT TEFLON*



For gaskets, packings and other process equipment, Du Pont "Teflon" offers this unique combination of properties:

- **CHEMICAL INERTNESS** — completely unaffected by acids, alkalis, aliphatics, aromatics, chlorinated hydrocarbons . . . all chemicals except molten alkali metals and fluorine.
- **HEAT RESISTANCE** — continuous service up to 500°F.
- **LOW TEMPERATURE TOUGHNESS** — as low as -320°F.
- **NON-ADHESIVENESS** — the tackiest materials show little tendency to stick to "Teflon."
- **LOW COEFFICIENT OF FRICTION** — either against itself or other materials.
- **ZERO MOISTURE ABSORPTION**
- **WEATHER RESISTANCE**

The Du Pont Polychemicals Department supplies "Teflon" in the forms of molding powders and aqueous dispersions. We'll gladly suggest names of processors of sheets, rods, tubes and finished parts. For full information, write: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 169 Du Pont Bldg., Wilmington 98, Del.



*Trademark for Du Pont tetrafluoroethylene resin

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

When inquiring check CP 3329 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Reinforced polyesters improved physically and chemically with inert fillers . . .

precipitated calcium carbonates make for better surfaces, reduce shrinkage, prevent resin loss. Developments in glass-fiber reinforced polyester resins within the past few years have pointed-up the value of precipitated calcium carbonates as low cost, high quality inert bulk fillers. The accompanying data are taken from the application of two precipitated calcium carbonates (Surfex MM and Kalite) with reinforced polyesters.

The cost of glass reinforced polyester products can be reduced and the physical properties substantially improved through the application of precipitated calcium carbonate fillers. We will briefly go on to see evidence for this claim.

Surfaces of filled reinforced polyesters are definitely better than those not filled . . . glass fibers are hidden, surfaces are smoother, and deep cracks in resin-rich areas are eliminated.

Filled resin, because of higher viscosity, tends to stay within the confines of the mold, thus there is little loss of resin from between closed matched dies.

Shrinkage resulting from polymerization can be greatly reduced through the use of fillers. Use of precipitated calcium carbonate filler results in a more even cooling rate for the resin mix and glass fibers. Consequently, the tendency for the fiber to pull away from the resin is minimized, and surfaces are smoother and suitable for painting.

Effect of Loading on Tensile Strength (Glass content: 20% by volume)

Filler	Percent Precipitated Calcium Carbonate Filler	0%	40%	60%
Surfex MM				
dry, psi	15,000-17,000*	15,000-19,000*	13,000-19,000*	
wet, psi	14,000-15,000	13,000-18,000	12,000-15,000	
Kalite				
dry, psi	15,000-17,000	12,000-15,000	—	
wet, psi	14,000-15,000	13,000-15,000	—	

*Ranges of values from polyesters Selection 5003, Vitrin 114, and Laminac 4115.

The following table represents the chemical resistance of glass reinforced polyesters filled with 40% precipitated calcium carbonates and compared with an unfilled control. Results are based upon 14 days immersion at room temperature, after which samples were removed, wiped dry, and weighed.

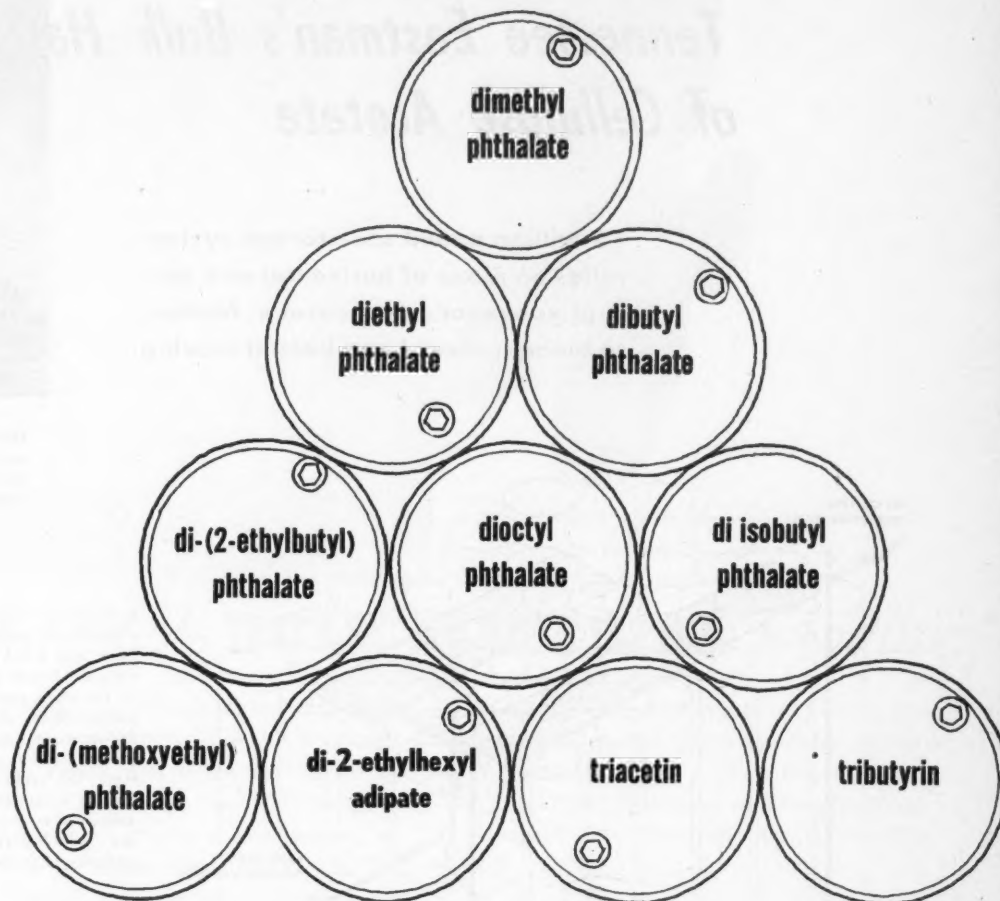
Effect of Loading on Chemical Resistance Percent Weight Change

	Control	Kalite	Surfex MM
Water absorption	1.1	1.1	1.2
10% CaCl ₂	0.6	0.6	0.6
10% HNO ₃	0.7	-3.7	-0.9
5% HAc	0.8	-2.0	0.2
3% H ₂ SO ₄	0.6	1.2	1.3
30% H ₂ SO ₄	0.5	2.4	0.7
10% HCl	0.3	-4.3	-0.4
1% NaOH	1.6	1.8	0.5
10% NaOH	0.9	0.9	-2.1
10% NH ₄ OH	5.3	2.5	2.4

(Precipitated calcium carbonate fillers for polyester resins are products of the Diamond Alkali Co., Dept. CP, 300 Union Commerce Bldg., Cleveland 14, O.)

EASTMAN
INDUSTRIAL CHEMICALS

plasticizers



Call or write for your copy of our PLASTICIZERS booklet. It contains specifications, properties and typical uses for all Eastman plasticizers.

These products are stored in bulk at Kingsport, Tennessee and Lodi, New Jersey by Tennessee Eastman Company; by DeMert & Dougherty, Incorporated in Chicago, and St. Louis, and by Anderson-Prichard Oil Corporation in Akron.

Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE

Sales representative for **TENNESSEE EASTMAN COMPANY**, division of **EASTMAN KODAK COMPANY**

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—7 Hollis St.; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; St. Louis—Continental Bldg.; Houston—412 Main St. **West Coast:** Wilson Meyer Co., San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

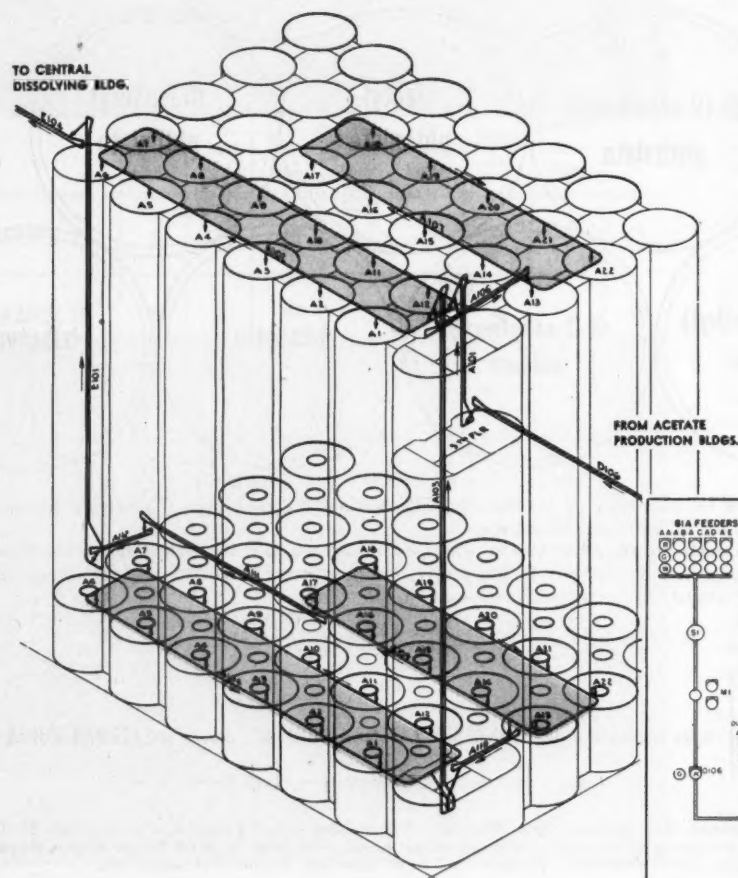
When inquiring check CP 3331 on handy form, pgs. 2-3

Tennessee Eastman's Bulk Handling of Cellulose Acetate

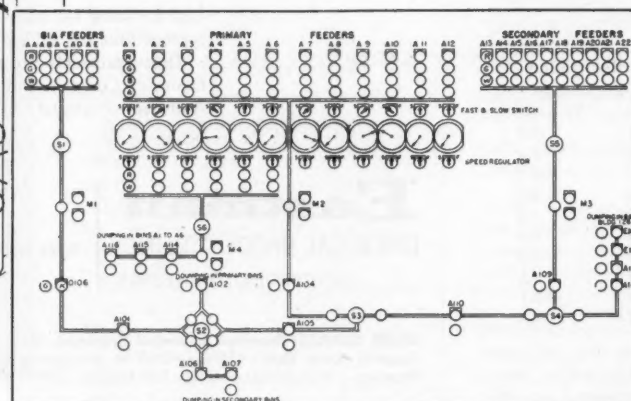
15-million pound silo-storage system relies on maze of horizontal and vertical conveyors and circular feeders to blend material and keep it moving



This huge concrete silo system can store 15 million pounds of cellulose acetate. On the right is a corner of the cellulose acetate manufacturing building showing conveyor going to silos. Beyond silos is the dissolving building, on extreme left are buildings where acetate staple is produced



Below is diagrammatic view of one section of the three into which the control panel board is divided. To the left is pictured that portion of the storage silo and conveying system controlled by the panel section. This section controls feeding of acetate into 12 primary silos and 6 secondary silos. Lights enable operator to follow the flow



STARTED in 1920 as a manufacturing unit for the production of methanol, an essential ingredient of photographic film base, Tennessee Eastman Co. today embraces six manufacturing divisions. Each division, although closely allied to the others, is a separate unit and ships its own specialized product or products to manufacturers of consumer goods throughout the world.

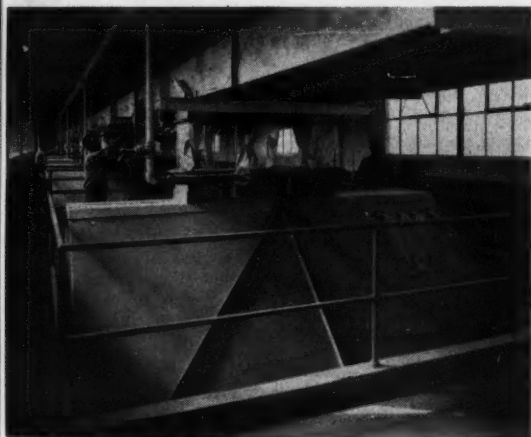
Dominating the buildings in the manufacturing area is the 15-million-pound silo-storage system. This unit consists of thirty-five 20 x 100' cylindrical silos so constructed and arranged that the interstices between the cylindrical portions are also used as storage silos. By this arrangement, the building has a total of 57 silos for storing cellulose acetate of which 33 are full size, 12 half size, and 12 quarter size. Two of the full size silos are used for a control room, elevator and for a stairwell.

The entire group of silos are arranged in three systems — each containing primary and secondary silos. Primary silos are used for the storage of acetate as received from

material handling



Sample is being taken from circular bin dischargers which deliver measured amount of acetate to horizontal conveyors for blending



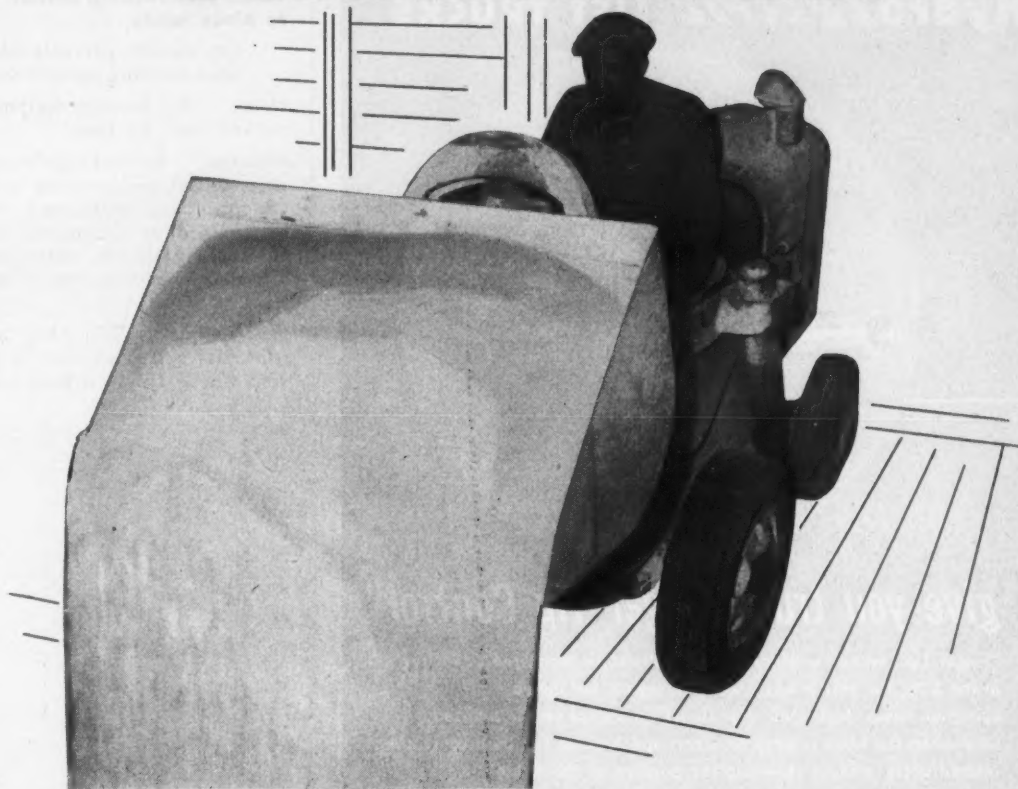
Three, 9-inch conveyors carry cellulose acetate at the rate of 14,000 pounds each per hour from silos to weigh bins pictured above in dissolving building

the manufacturing process depending on the analysis of the acetate. Material in the primary silos varies within narrow limits in composition, and batches of like analysis are stored together. After blending, which is the next step for the stored material, it then feeds into the secondary silos. From these silos the acetate is fed directly to the dissolving process.

Horizontal and vertical conveyors move the material to storage in the silo building and from there to weigh bins in the processing department. Approximately 57 Redler conveyors (Stephens-Adamson)

(Continued on page 53)

PAYLOADER



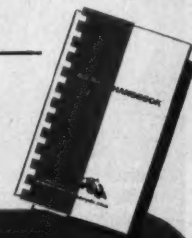
For Fast, Flexible **BULK-MATERIAL** Handling!

"PAYLOADERS" spell flexibility and low-cost in the handling of fertilizers, chemicals and other loose, bulk materials. And these tractor-shovels can go to work cutting handling costs *right away*. No expensive investment or plant rearrangement is required before you begin reaping "PAYLOADER" benefits. They travel swiftly indoors and out and maneuver in close quarters. They scoop-up, carry, load, dump, spread . . . lift and lower . . . push and pull. They load and unload boxcars of bulk. In fact,

"PAYLOADERS" are being used for so many jobs in so many plants that they can probably cut handling costs for you too. Get all the facts from your "PAYLOADER" Distributor or write The Frank G. Hough Co., 744 Sunnyside Ave., Libertyville, Illinois.

FREE HANDBOOK

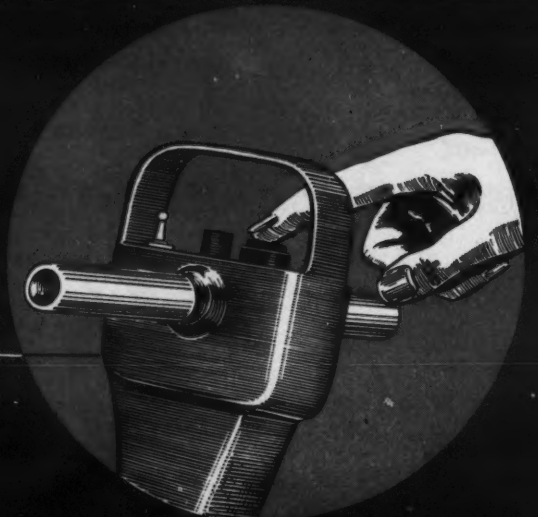
Tells how and where to look for signs of inefficient bulk-materials handling . . . how to analyze, organize and set up an efficient handling system. Plus many useful tables and data. Write for "Bulk Materials Handbook."



When inquiring check CP 3332 on handy form, pgs. 2-3

STUEBING DESIGNED • STUEBING ENGINEERED • STUEBING BUILT

HydroElectric LIFT TRUCKS



give you true "Finger Tip Control"

"Finger Tip Control" originated with Hydroelectric motorized hand trucks in the 30's. The phrase has since been copied, but the ease of operation never duplicated. True finger tip control can be realized only when the truck is *easy to steer*, and braking can be accomplished *immediately* without changing the position of the handle. Good finger tip control is not only a matter of button operation, but closely dependent on the ease of steering and quick braking—braking with the handle in any position—not just up or down. Truly, the Hydroelectric truck was built with the operator in mind—two speeds forward and two speeds in reverse, plus the dynamic brake are simplicity at its best—assuring greatest safety for the most inexperienced operator. Turning, backing, stopping, steering in close quarters, the Hydroelectric trucks operate smoother, easier, and are more responsive and effortless than any similar lift truck.



Want more facts
about this fine power lift truck?
Write to:

LIFT TRUCKS
INCORPORATED

2423-31 SPRING GROVE AVE.
CINCINNATI 14, OHIO

There is a model for every purpose to handle any kind of material.

When inquiring check CP 3333 on handy form, pgs. 2-3

MATERIAL HANDLING

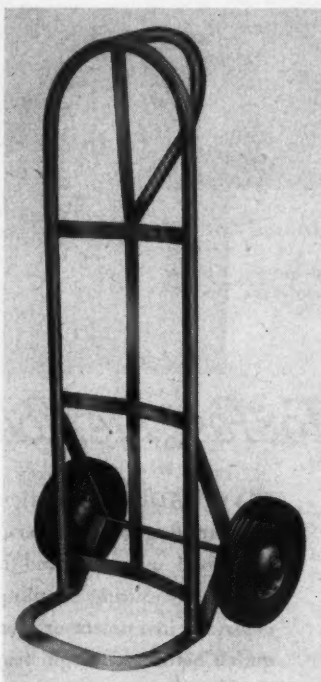
Beveled nose of hand truck eliminates rocking action to place loads . . .

step climber prevents wheels from catching on stair treads

Uses: For moving equipment, stacked loads by hand.

Features: Beveled edge on open nose model slides easily under cartons, cases, crates, and other materials, thus eliminating need for rocking stacked materials to introduce or remove nose of hand truck.

Description: Wheel-Ezy hand truck has a step climber to prevent wheels from catching under



Beveled nose slides easily under bulky load

overhang of stair treads. Construction provides strength for handling up to 500 lb. Trucks can be had with steel Durastan Resinoid, or five types of rubber wheels. Curved handle is welded to truck at both top and bottom. Double handle model is available.

(Development of the Rapids-Standard Co., Inc., Dept. CP, Rapistan Bldg., Grand Rapids 2, Mich. . . or for more information check CP 3334 on handy Reader Service slip between pages two and three.)

EXIT
THE
SHOVEL . . .



ENTER
THE
Hapman

Sealed-pin Chain, Neoprene-flighted

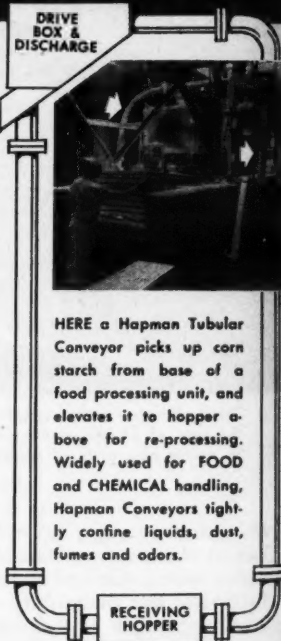
TUBULAR CONVEYOR

for low-cost handling of bulk flowable materials—wet or dry

"Shovel labor" costs plenty — so do safety hazards and confusion caused by heavy aisle traffic. But there's a better way — the Hapman Way!

By handling innumerable bulk materials with Hapman Tubular Conveyors, you can slash these costs — and increase safety and efficiency! Can you handle metal chips from machine tools? **Yes!** Flour? **Yes!** Abrasive or corrosive chemicals? **Yes!**

Get details NOW — write Hapman, describing your problem. Ask for Bulletin CP-953.



HERE a Hapman Tubular Conveyor picks up corn starch from base of a food processing unit, and elevates it to hopper above for re-processing. Widely used for FOOD and CHEMICAL handling, Hapman Conveyors tightly confine liquids, dust, fumes and odors.

Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

When inquiring check CP 3335 on handy form, pgs. 2-3

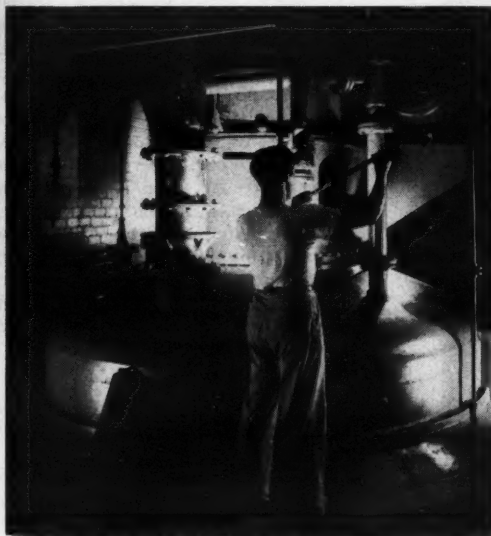
CHEMICAL PROCESSING

Handling Cellulose Acetate

(Continued from page 51)

are in use along with 72 circular bin dischargers to insure a steady flow of material from silos and batch bins. Redlers vary in size from 7 to 13" units with capacities up to 7-tons per hour.

All conveyors and dischargers are protected against damage by the use of shear pins in the drive sprocket hubs. Conveyors are interlocked so that one cannot operate unless next conveyor in line is operating. Under normal conditions all conveyor systems are operated from a central control panel. There are three separate sections to the panel board corresponding to the three systems into which the silo system is organized. Each section of panel board is arranged to indicate the silos in the system under its control and the type material being handled. By following the arrangement of lights provided the operator is easily able to tell which feeders are operating, which conveyors are running, and the origin and destination of the acetate. Tachometers on the board indicate circular feeder discharge speed. Only manual operation involved is the opening and closing of gates under the conveyors which discharge into the tops of the silos. If necessary, all conveyors and discharge feeders can be operated manually from a switch on the back of the control panel or from a switch at the conveyor motor.



Acetate is discharged from weigh bins on floor above into dissolving mixers. After being dissolved the acetate solution is filtered, blended and pumped to spinning machines for making yarn and staple

The entire system of silos and conveyors is under inert gas pressure at all times in order to reduce the oxygen content below 10% therein — thereby eliminating the possibility of fire or explosion. Oxygen content of the inert gas supply is tested continuously and safeguards are employed to stop the entire operation automatically in the event the oxygen content exceeds 10%. Additionally, several conveyors and silos are analyzed for oxygen content with portable equipment every shift.

(Continued on next page)

moving granular material in bulk?



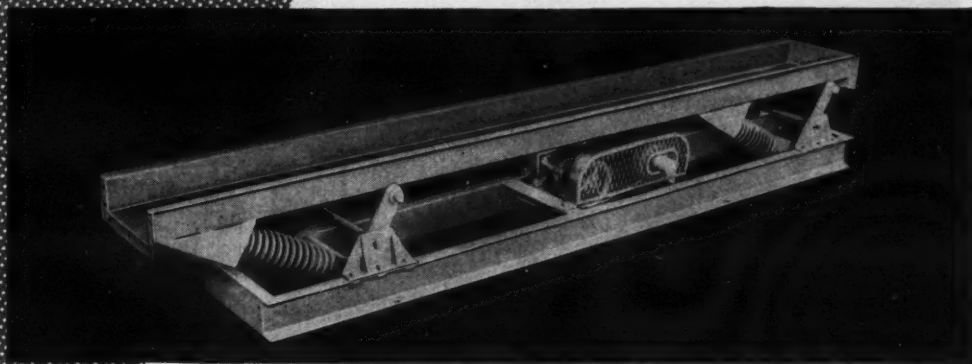
YOU'LL MOVE MORE—
AND **Save** MORE
with a
G-W OSCILVEYOR

Here's the *right* way to move that hard-to-handle material in bulk—*whatever* it is—without danger of leaking, spilling, or overflow... much more economically, too.

The G-W Oscilveyor is a vibrating trough conveyor that moves material in a steady flow by short forward movements of the trough (from 600 to 800 cycles per minute, depending on the material). It's self-cleaning, comes in a variety of lengths to suit the installation, and can handle a wide range of materials with minimum segregation and breakage.

Available in either ordinary steel, stainless-clad, or all-stainless steel, the Oscilveyor is one of the latest developments of Gifford-Wood's more than 139 years experience in *engineered* materials handling. And because it's engineered, you can be sure that every part, every function, is designed with an eye to efficiency... for the utmost in operating economy.

Want more information? We'll gladly send a data sheet and show you how G-W Oscilveyors can do a real job for you. Write today.



When you think of **ENGINEERED** materials handling...
think of **GIFFORD-WOOD**

GIFFORD-WOOD Co.

Since 1814
HUDSON, NEW YORK

420 Lexington Ave.
New York 17, N. Y.

Railway Exchange Building
St. Louis 1, Mo.

565 W. Washington St.
Chicago 6, Ill.

Ⓜ 8947

When inquiring check CP 3336 on handy form, pgs. 2-3

FEEDING A PRODUCTION-HUNGRY PLANT WITH A

One Cubic Yard "Spoon"



Feeding raw materials to a production-hungry plant is just one of many uses for the multi-purpose Allis-Chalmers HD-5G Tractor-Shovel. It receives bulk materials, then carries them directly to mixing hoppers, conveyors or storage as needed. In addition, this powerful crawler excavates for new construction, handles coal, cleans up and loads waste . . . also clears snow and maintains yards and parking areas.

Interchangeable attachments, such as bulldozer blades, special buckets, lift fork, crane hook and trench hoe, add still further to its usefulness.

Tractor-Shovels are also available on the three larger sizes of Allis-Chalmers crawler tractors, giving a range of standard buckets from one to four cubic yards — and up to seven cubic yards for light materials.

Let your Allis-Chalmers dealer tell you more about how you can mechanize your materials-handling the efficient tractor-shovel way.



Keeps Production Moving—Fast!

The HD-5G feeds bulk materials in exact required amounts for uniform mixture — a full cubic yard at a scoop. In handling light materials, a two cubic yard bucket doubles output. Special fast reverse greatly speeds operation on short runs. This flexible tractor starts boosting production as soon as it's put on the job . . . no waiting for costly installations or changes in plant layout when you mechanize materials handling the Allis-Chalmers tractor-shovel way.



Receives Material at Plant

The HD-5G scoops a heaping load of any material at the unloading trestle, then delivers it directly to mixing hopper, conveyor, or storage area. Truck wheels, idler and support roller bearings are positively sealed against grit and moisture and require lubrication only once every 1,000 hours. This feature alone saves about 30 minutes' greasing time a day.



Builds Storage Piles—Anywhere

This fast-working tractor maintains large stockpiles in the open or under a protective shed. Crawler tracks provide traction and flotation to work right up on the pile, enabling it to put many more cubic yards of material into a given area. Tracks also give long life in cullet and similar material as only steel can.

ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U.S.A.

MATERIAL HANDLING

(Continued from preceding page)

Cellulose acetate used in the manufacture of Estron — Eastman acetate yarn and staple — must have a definite set of characteristics in order that the quality of the resulting yarn product be uniform. The two properties which are most closely controlled in the manufacturing process are viscosity and acetyl content. In addition further uniformity of the cellulose acetate is obtained by blending various batches in bulk handling system.

When a batch of acetate has been produced and the analysis completed by the cellulose acetate plant, the results of the determinations and weight of the batch are forwarded to the bulk handling dispatcher. The dispatcher checks the analysis and classifies the acetate for storage on the basis of viscosity and acetyl content. Transfer is then accomplished with the conveying equipment into the proper primary storage silo.

Blending of the acetate is accomplished by discharging several classes of acetate from three to six silos at a time into a horizontal conveyor. Rate of discharge from each silo can be controlled by regulating the speed of the circular feeder on the bottom of each silo. As mentioned previously, the circular feeder speed is indicated by tachometers at the control panel to any desired setting between 0 and 100. Their proportions can therefore be calculated on a percentage basis. Actual mixing of the acetate thus takes place in the horizontal conveyors.

(Information courtesy of Tennessee Eastman Co., Division of Eastman Kodak Co., Kingsport, Tenn.)

Heavy-duty roller bearings described for jaw crushers

Eight-page, illustrated bulletin outlines features of heavy-duty roller bearings for bumpers on manufacturer's Type H forced feed crushers and the Type J. Bul C12-B12 is issued by The Denver Equipment Co., Dept. CP, 1400 17th St., Denver 17, Colo. When inquiring specify CP 3337, pages 2 and 3.

For more information on product at left, specify CP 3338 . . . see information request blank between pages 2-3.

BIN STUCK LATELY?



If you're troubled with sticking, arching, bridging or settling conditions in handling your dry chemical materials, solve it the simple way with a CLEVELAND AIR VIBRATOR. A lot of chemical people have found out they work like a charm and cost very little.



Standard metallic impact and air-cushioned, quiet types are available in a wide range of sizes.

CATALOG NO. 105 ON REQUEST



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 3339 on handy form, pgs. 2-3

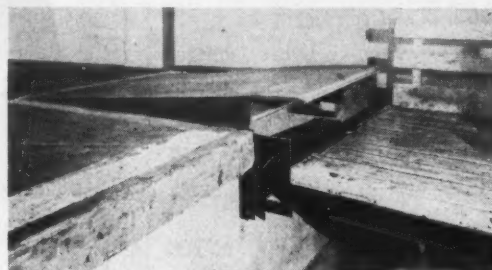
MATERIAL HANDLING

No power is necessary for lowering dockboard onto truck body, unit adjusts itself

Uses: For "bridging the gap" between dock and trucks during loading or unloading.

Features: Unit is automatic, uses no hydraulic, electric, or hand power.

Description: With Hi-Lo dockboard, as truck is backed into the dock, it presses extending operating lever as shown in photo, thus lowering



No power is required for lowering unit

dockboard to truck bed. Several models are available including units for installation in new or rebuilt docks. Packaged unit can be built to specific dock height and is shipped ready to operate after hanging counterweight.

(Development of the Dockboards, Inc., Dept. CP, 316 E. Silver Spring Drive, Milwaukee 11, Wis. . . or for more information reader may simply check CP 3340 on convenient Reader Service slip between pages two and three.)

Where dock space shortage prevents use of ramps, lifting device raises, lowers trucks . . .

electric-hydraulic system is set out of the way in pavement below, handles 40,000 lb

Uses: For raising or lowering over-the-road carriers to dock height where dock space prevents installation of adjustable dock ramps.

Features: Unit is set into pavement in front of dock, has heavy-duty electric-hydraulic system to raise or lower 40,000 lb to dock height.

Description: Adjust-A-Truck lifting device is designed for operation from a 110v control circuit. Deck of the unit has a surface of checkered plate carried on a framework of standard structural beams and channels, welded throughout. Deck size is 9 x 12'; 10 x 12' long is standard. Electric-hydraulic power unit consists of a pump, motor, reservoir, check valve, solenoid-operated release valve, and a pressure relief valve, all assembled as a complete unit. Operation is by pushbutton.

(Development of the Rowe Methods, Inc., Dept. for more information check CP 3341 on handy form, pages 2 and 3.)

CP, 2534 Detroit Ave., Cleveland 13, Ohio . . . or



How Wyandotte Chemicals Saved 35% in Storage Space

By building its materials handling system around Lewis-Shepard SpaceMaster Electric Fork Trucks, Wyandotte Chemicals Company, Wyandotte, Mich., got more efficient storage for over 250 different items . . . in 35% less floor space. And many of Wyandotte's dependable L-S SpaceMasters work 16 hours a day with a minimum of costly maintenance attention.

WHY WYANDOTTE PICKED SPACEMASTERS

Here are some of the reasons Wyandotte supervisors selected SpaceMaster battery powered trucks: compactness; high capacity-to-weight ratio; full free lift; dependable performance; minimum maintenance.

SPACEMASTERS CAN SAVE YOU MONEY

Want proof? . . . Then, write for "Proof Folders" that show how companies in many industries are saving with Lewis-Shepard Electric Trucks. You're invited to inspect this proof . . . draw your own conclusions.

"Proof Folders" include facts, figures, and familiar company names. Every word is a direct quotation or approved by the company concerned. They are the true materials handling experiences of both large and small users in many industries, told in a way that's interesting and informative.

Send for "Proof Folders" and Comparison Charts today! If you prefer, call our local representative listed under "Trucks, Industrial", in the Yellow Pages of your telephone book.



The "MASTER" Line

LEWIS-SHEPARD

130-9 Walnut St., Watertown 72, Mass.

Please send

- Electric Fork Truck Comparison Charts
- Proof Folders showing L-S Trucks at work

Name _____

Company _____

Street _____

City _____ State _____



When inquiring check CP 3342 on handy form, pgs. 2-3

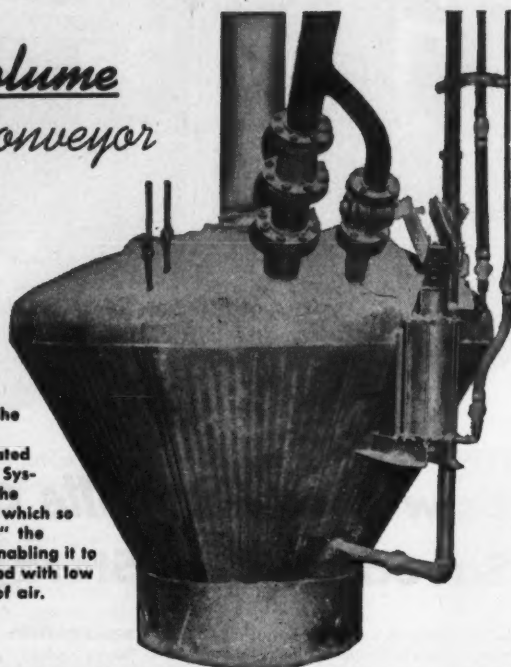
Robinson

Air Activated

Conveyor

The Low-volume Air Conveyor

► Heart of the Robinson Air-Activated Conveyor System . . . the Activator which so "fluidizes" the charge, enabling it to be handled with low volumes of air.



Averages 1 Cubic Foot of Air per Pound of Materials Handled

Right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.

ROBINSON

Air Activated

A Division of
Morse Boulder Destructor Co.

CONVEYOR SYSTEMS

211-V EAST 42nd ST. • NEW YORK 17, N. Y.
Representatives in Principal Cities

When inquiring check CP 3343 on handy form, pgs. 2-3

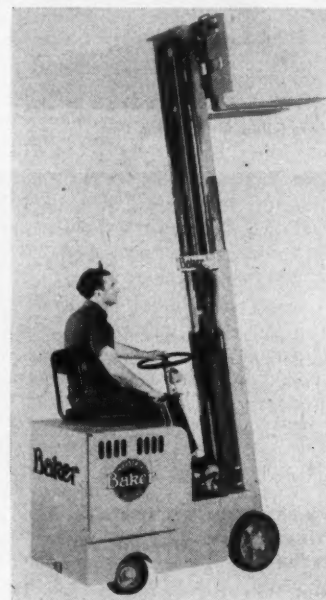
MATERIAL HANDLING

Easy maintenance, short length, trailing axle are truck features

Uses: For general materials handling requiring use of electrically driven, 1500-lb capacity fork lift truck.

Features: Short overall length (95"), easy maintenance, and a special trailing axle that allows unit to "step over" uneven surfaces and floor obstructions are features of lift truck.

Description: Other design features of the FL-15 include: bevel and spur gear reduction for smooth, tractive power, pow-



Stacks 36" loads in 6' aisle

erful industrial truck motor, low-pressure hydraulic system. Over all width of the unit is 30"; turning radius is 59"; overall height is 83"; maximum travel speed is 6.25 mph. Unit has a 130" lift, can stack 36" loads in a 6' aisle. Weight without battery is listed as 2815 lb.

Elimination of usual cowling in front of operator gives added visibility at floor level. Driver's seat is offset.

(Development of Industrial Truck Div., Baker-Raulang Company, Dept. CP, 1230 West 80th St., Cleveland 2, Ohio . . . or for more information check CP 3344 on handy form, pages 2-3.)



Get this new 48-page idler data book

Here's complete information on industry's most comprehensive line

COVERS Link-Belt's entire roller bearing idler line of 34 types in seven basic designs. Includes all the facts you need for ordering and application: dimensions and specifications, selection and spacing data, recommended lump sizes, accessory information. Get your copy of Book 2416 today. Use the handy coupon below.

LINK-BELT

BELT CONVEYOR IDLERS

LINK-BELT COMPANY
Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarboro, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

LINK-BELT COMPANY
220 S. Belmont Ave., Indianapolis 6, Ind.
Please send me immediately a free copy of your 48-page Idler Book 2416.

Name
Position
Firm
Address
City..... Zn.... State.....

When inquiring check CP 3345 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

Walls, furnishings won't get marked if hand trailer should bump against them . . .

roller-bearing, rubber-tired wheels aid in moving loads up to 2000 lb

Uses: For internal handling of equipment and supplies.

Features: Damage to doorways, walls, or projections is averted use of a non-marking, white rubber bumper which extends around the frame of the trailer.

Description: Roller-bearing wheels with pneumatic tires permit the 2000 lb capacity trailer to roll easily. Two or more trailers can be hitched together with safety couplers and hauled by a



Frame won't damage doors, walls, projections because rubber bumper skirts its frame

light duty electric tractor. Construction features include: flush hardwood deck, 3 x 6' x 18 1/2" high; 4-ply pneumatic tires, 3.50 x 6" on the casters and 4.00 x 8" on load wheels; and rack sockets on sides and ends. Standard racks are illustrated.

(Development of the Mercury Manufacturing Company, Department CP, 4044 S. Halsted Street, Chicago 91, Ill. . . . or for more information simply check CP 3346 on convenient Reader Service slip between pages two and three.)

Expandable boom conveyor featured in bulletin

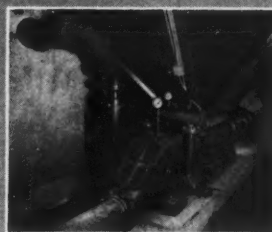
Complete line of manufacturer's package handling conveyors is described in 16-page, 2-color catalog. Units include power belt conveyors, both portable and fixed, roller and wheel gravity units featuring the Expand-o-veyor with extendable boom and the Black Velvet process. Extendable boom permits overall length of conveyor to be varied from 15 to 25', in 6" steps. A 3' gravity roller section for further length is optional. Photos and specifications are included.

Bul 400 is issued by A. B. Farquhar Div., The Oliver Corp., Dept. CP, York, Pa. When inquiring about this publication, reader may simply check CP 3347 on convenient Reader Service slip between pages two and three.

ONLY FULLER GIVES YOU THIS SELECTION

THE BIG 4 IN AIR CONVEYING

**THE
RIGHT
CONVEYOR,
IN THE
RIGHT PLACE,
TO DO
THE JOB
RIGHT!**



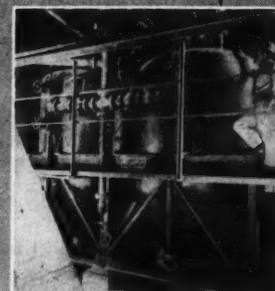
FULLER-KINYON



F-H AIRSLIDE



AIRVEYOR



FULLER-FLUXO

Fuller Company occupies a position unique in the field of conveying dry, pulverized and granular materials with air. It designs and builds four basic, primary types of conveying systems, from which it can select one, or possibly a combination of two or more systems to best meet specific requirements and operations in your plant. In other words, Fuller is not restricted, or tied down, to just one system for conveying various materials, which have many different characteristics. Fuller need not substitute; it can design and furnish the system best adaptable to the materials to be handled.

Add to all this, Fuller's 26 years of experience in the field of air-conveying, gained by designing and building hundreds of installations, and you purchase quality, plus!

The next time you are faced with a conveying problem for dry, pulverized and granular materials, call on a Fuller engineer for practical experienced advice. This is a Fuller service—with no obligation.

Write for Bulletin G-1.

FULLER COMPANY, Catasauqua, Penna.

Branch Offices

Chicago • San Francisco • Los Angeles • Seattle • Birmingham

Fuller

DRY MATERIAL CONVEYING SYSTEMS
AND COOLERS—COMPRESSORS
AND VACUUM PUMPS—FEEDERS
AND ASSOCIATED EQUIPMENT

When inquiring check CP 3348 on handy form pgs. 2-3

G-80
1962

Economical Bronze Design



Series I—Heavy duty bronze rotary gear pumps
Oilless bearings 2-23 G.P.M.—0-100 P.S.I. \$14.25-\$29.75 (six pumps)

Series II—Close coupled motor driven bronze pumps
Oilless bearings 2-4 G.P.M.—0-100 P.S.I. \$20.00-\$22.50 (two pumps)

Series F—High volume bronze rotary gear pumps
Oilless bearings 50-150 G.P.M.—0-150 P.S.I. \$77.50-\$200.00 (five pumps)

Series IV—Rubber impeller bronze pumps
Oilless bearings 6-21 G.P.M.—0-30 P.S.I. \$16.00-\$28.00 (three pumps)

Series 55—Standard bronze rotary gear pumps
Grease fittings 2-23 G.P.M.—0-100 P.S.I. \$11.25-\$29.00 (twelve pumps)

Series G—Standard bronze centrifugal pumps
Grease fittings 2-25 G.P.M.—2-10 P.S.I. \$9.25-\$24.00 (three pumps)

See our catalog in Sweet's PRODUCT DESIGN File

OBERDORFER BRONZE PUMPS

Industrial Pump Div., Oberdorfer Foundries, Inc.
639 Thompson Rd., Syracuse, N. Y.
Address the 1953 edition of the Oberdorfer Industrial
Pump catalog to:

NAME

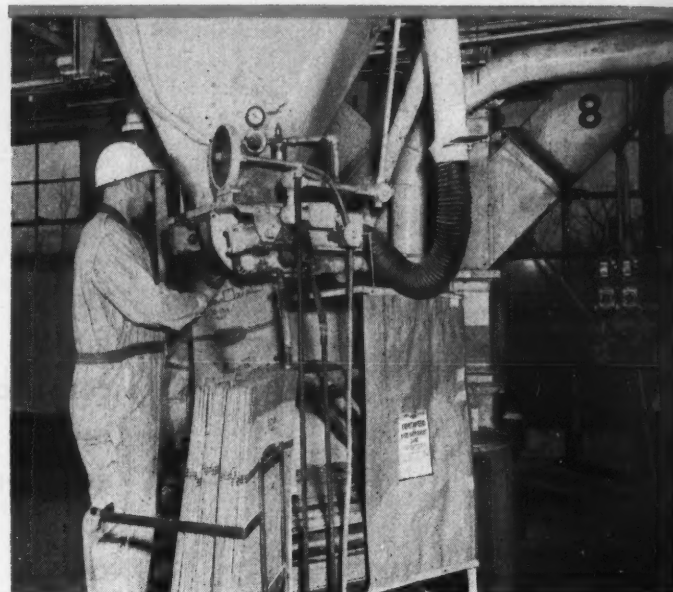
COMPANY

ADDRESS

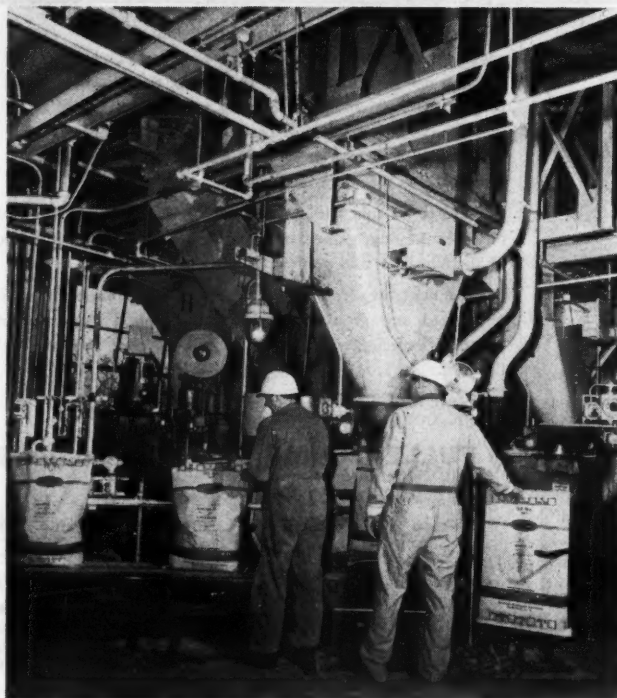
Do you want a factory representative to call ☐ Yes ☐ No

material handling

Fig 1 Bags to be filled are kept standing on end for quick transfer from rack to hopper spout. Pneumatically-operated foot-controlled holder securely clamps bag to spout



Reciprocal Bagging Operation Allows Hopper-Scale Team to Package and Weigh 1200 lb/min



Electronic controls keep feed supplement moving to alternate hopper for increased output

PROBLEM: Expanded facilities for production of aureomycin animal-feed supplements at the Lederle Laboratory Div. of American Cyanamid Company also called for a speed-up of the bagging operation. At the company's Pearl River, N. Y. plant, the process included filling of 50- and 100-lb bags with the finely-ground material. In the past, older and obsolete methods handled only 1½ bags per minute.

Solution: Complete mechaniza-

tion. Fig 2 Twelve 50-lb bags (or six 100-lb bags) can be handled each minute by each operator with duplex system. While one bag is filled, the other bag is weighed

When inquiring check CP 3349 on handy form, pgs. 2-3

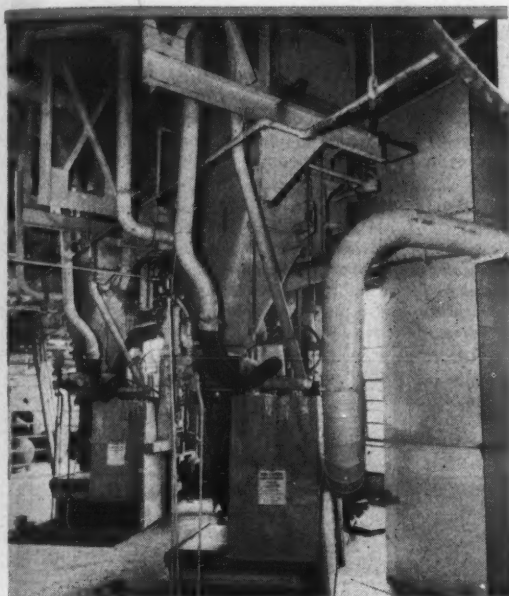


Fig 3 Flexible rubber hose draw off any dust that might accumulate during bag filling and carry it to remote dust collectors

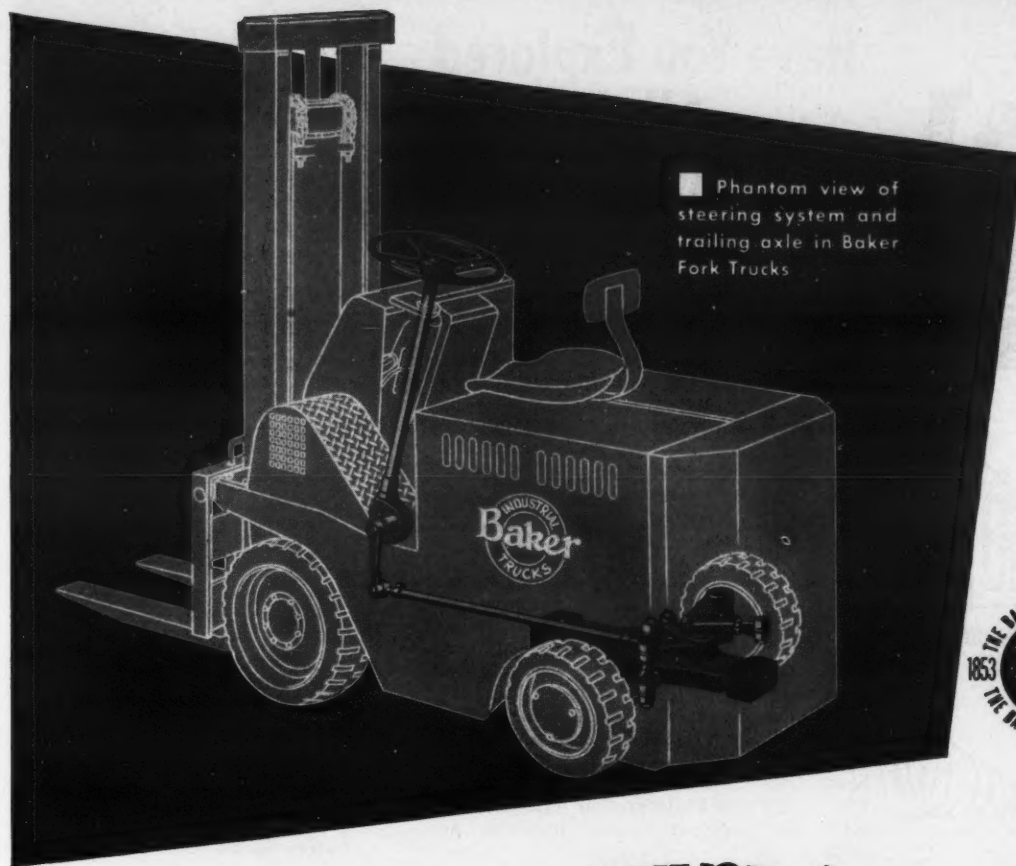
tion of the weighing and bag-handling was made part of the operations. Each bagging hopper is fed by weigh hoppers of two automatic scales, pre-set to weigh exact quantity to be bagged. While one scale is emptying into the bagging hopper, the other is weighing. As soon as the weigh hopper of one scale contains its pre-set weight, incoming supplement automatically is diverted by electronic controls to the other weigh hopper.

In operation, heavy-duty paper bags are picked up from specially-designed bag racks and fitted over the outlet spout of the bagging hopper as shown in Fig 1. Special rack stands bags on end and permits operator to pickup and position them more quickly than if they were stored flat on their sides. Bag is clamped to spout by pneumatically-operated, foot-controlled bag holder.

Foot-control also releases hopper contents into the bag. When contents have been delivered, bag is released onto a short conveyor section which carries it to a second conveyor moving past a bag sewer (Fig 2). This second conveyor deposits the filled, closed bag onto a main-line conveyor for transportation to another room for storage or shipping.

The scale weigh-hoppers are fed by screw conveyors which deliver material from overhead silos, above which fourteen different supplements have been mixed. Depending upon the particular formula, ingredients are selected from various storage receptacles, mixed, delivered to supplement silos,

(Continued on next page)



Phantom view of steering system and trailing axle in Baker Fork Trucks



The most maneuverable fork truck

Maneuverability ranks high among features essential to efficient fork truck performance. Finger-tip control of steering, ability to make sharper turns and operate in narrower aisles, complete accommodation to uneven roadways, effective snubbing of road shocks—these are some of the qualities engineered into Baker fork trucks which make them the most maneuverable in their class—and less fatiguing to the operator.

Automotive type steering assembly with ball-type joints and anti-friction bearings in the steering linkage give you a truck as easy to handle as your automobile. Proper steering geometry minimizes "scrubbing" of tires. The wide-angle steering axle is mounted longitudinally in jumbo-size rubber blocks. This absorbs road shocks and provides constant, smooth traction and travel despite the most adverse floor conditions.

Write for

your copy of the "Baker Handling Library" a new portfolio of actual case histories.

THE BAKER-RAULANG COMPANY
1208 WEST 80TH STREET • CLEVELAND 2, OHIO

*The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.
Material Handling and Construction Equipment*

Baker

industrial trucks

When inquiring check CP 3350 on handy form, pgs. 2-3



Have You Explored All the Ways To Save Money With a Fork Truck?

WOULDN'T IT BE GOOD BUSINESS to know all the ways to save money with your Clark truck? It's the function of Clark attachments to transform your truck into a machine of many uses. Rather than let a truck stand idle for "lack of work," you can switch from one attachment to another in 10-20 minutes—go from one job to another, from partial idleness to full-time usefulness.

For example, why use manual labor to handle scrap, coal, sand or even cement? You'll do the job faster, more economically with one of Clark's shovel attachments. Why manhandle cartons, crates, rolls, drums, bales? Simply switch to the proper Clark attachment—there's one designed to handle practically any product or material. And for the relatively few cases where a standard attachment won't do the job, it's more than likely that our Custom Truck Department can design and build special equipment to solve the problem (—and inquiries are invited).

Perhaps you're hesitating to buy a fork truck because your principal handling job requires only part-time truck application. If that's the case, don't fail to look into this attachments angle. Chances are we've got, or can devise, one or more attachments that will enable you to utilize a fork truck profitably, all day long.

Your local Clark dealer (listed in the Yellow Pages of your phone book) will be glad to help you plan ways to multiply the usefulness of your Clark trucks and POWERWORKER hand trucks. Or if you prefer to use the coupon, we'll gladly send a brochure describing the Clark line of attachments.

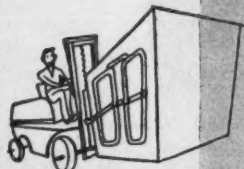


CLARK ELECTRIC, GAS, DIESEL, L.P. GAS FORK TRUCKS AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

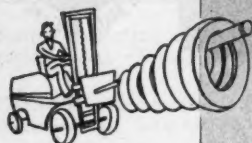
INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 9, MICHIGAN
Please send: ☐ Attachments Catalog ☐ Driver Training Movie
☐ Have representative call

Name _____
Firm Name _____
Street _____
City _____ Zone _____ State _____

AUTHORIZED CLARK INDUSTRIAL TRUCK DEALERS AND SERVICE STATIONS IN BATTLE CREEK, MICHIGAN



**CARTON
CLAMP**



RAM



SHOVEL



CRANE



**ROTATING
ROLL CLAMP**

MATERIAL HANDLING

(Continued from preceding page)

discharged into the screw conveyors and are finally delivered to the weigh-hoppers for weighing and subsequent bagging.

Results: By use of this automatic duplex bagging, weighing, closing system, each operator can fill twelve 50-lb bags or six 100-lb bags per minute — a considerable increase over the 1½ bag per minute rate which was formerly obtained.

With the system, all lost time is eliminated in waiting for batches to be weighed. Any dust which may escape during bagging operations is carried by flexible pneumatic hoses to remotely located dust collectors.

(Automatic duplex system used in the plant was engineered and manufactured by the Richardson Scale Co., Dept. CP, Clifton, N. J. . . . or for more information check CP 3352 on handy Reader Service slip, pages 2 and 3.)

Handy levers on wheels team up for moving heavy loads . . .

handle up to 5000 lb through high leverage ratio

Uses: For moving or storing heavy objects.

Features: When used in pairs, (one man apiece) units lift and roll away objects with ease.

Description: In three models, Micro Lever-Dollies have hardwood levers, rib-reinforced steel wheels with 5" diam, lifting plate of tempered steel alloy, and steel axles. Model 55 has 3500 lb lifting capacity; Model 68 has 4250 lb capacity; Model 77 has 5000 lb capacity. All have 8" lifting heights. Over all lengths are 5, 6, and 7' respectively.

(Development of Micron, Inc., Dept. CP, Bettendorf, Iowa . . . or for more information check CP 3353 on handy form, pages 2 and 3.)

This month's Processing
& Engineering Data Section
starts on page 222.



LET Air MOVE YOUR CHEMICAL MOUNTAINS

VACU-VEYOR will reduce your bulk handling costs. It is a completely enclosed, portable, pneumatic system for conveying up to 40,000 pounds of material per hour.

Only one man is needed to direct the pick-up nozzle—the rest is fully automatic. Handles any dry, bulk material in powder, pellet, granular or crystalline form. Vacu-Veyor provides a simple, low-cost method of unloading trucks, ships or railroad cars. It will convey material as far as 350 feet—goes around corners or other obstacles—and is particularly useful for reaching into inaccessible spaces.

VACU-VEYOR pneumatic conveyors can be designed to handle practically any capacity, with portable or fixed installations as required.

For further information, write today to Dept. J-1309-1.

VACU-BLAST CO. INC.
BEEMONT • CALIFORNIA

When inquiring check CP 3354 on handy form, pgs. 2-3

Screw-Lift Delivering

**Dry Bulk Ice Cream Mix
from Dryer to Mixer
... NO MANHANDLING!**



Typical installation in Northwest Dairy Co-op. Unit is 12' high, with 3' feeder. Material flows from dryer and elevates to mixer. Stainless steel construction with quick opening tubing.

Hammond Screw-Lifts can be made a part of your processing procedure — handling any free-flowing, granular, flaky or solid material, moist or dry. It is not just a conveyor set up vertically, but has patented features which assure freedom from clogging, degradation or whip.

Eliminates manhandling — starts and stops with other equipment — a revolutionary time, trouble and money saver.

We can show you hundreds of applications where Screw-Lifts have solved material handling problems profitably. Write.



Screw Conveyor Corporation
HOFFMAN ST. HAMMOND, IND. WINONA, MISSISSIPPI
PRODUCTS

When inquiring check CP 3355 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 3351 on handy form, pgs. 2-3

**Danger of damage to flat belts
is reduced by belt training
return idler . . .**

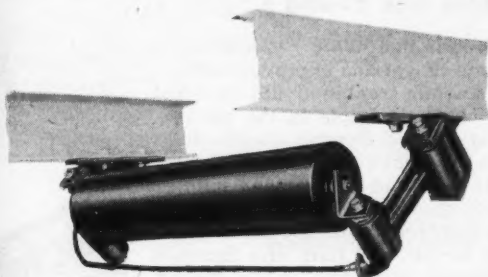
provides automatic alignment without use of side guide idlers

Uses: For use with all types of conveyors to prevent belt from roving.

Features: Idler design assures positive, automatic aligning action, without use of side guide idlers, reduces danger of damage from belt roving.

Description: Idler consists of a dead-shaft roller-bearing return roll, mounted at each end to a toggle-like arrangement of swivel arms suspended from conveyor framework at an angle of approximately 45° in the direction of belt travel.

Lateral movement of belt to one side results in increased weight on that side which, due to idler construction, causes that end of roll to move for-



Eliminates belt roving on conveyors

ward and downward. At the same time, opposite end of roll is moved backward and upward. This changing of normal position of roll with belt guides belt back to central position.

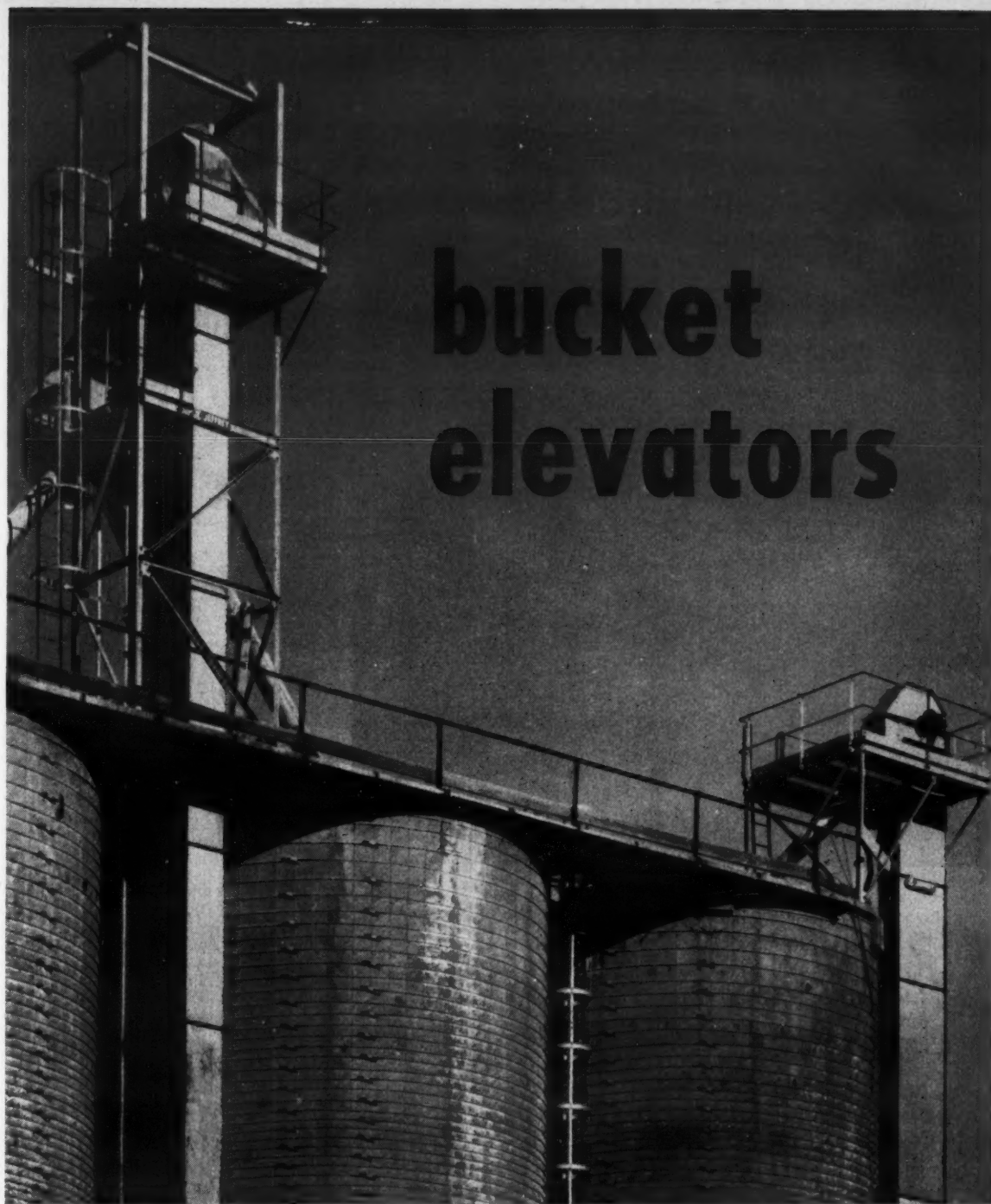
Idler acts to maintain an equilibrium, with belt in center of roll and roll in normal position. Action is equally effective on horizontal, inclined, or declined conveyors, and effect of build-up of material on roll is negligible. Because of its design, this idler operates in one direction only.

When installed, one belt training idler unit should be located close to the head pulley to immediately center return belt, and one unit close to tail pulley so as to center belt on tail pulley for subsequent loading. Additional units should be placed as conditions warrant.

Roll shaft is regularly furnished for greasing from one side of conveyor (right side, unless otherwise specified) with a supported, Flex-line grease-tube extension serving far end. High-pressure, hydraulic-type, grease fittings are standard.

Style No. 41 idler is furnished with standard 5 or 6" diameter steel return rolls. Style No. 41RC idler, equipped with a standard 5½" diameter rubber-covered spiral return roll, can be furnished.

(Product of Dept. PR, Chain Belt Co., Dept. CP, 4701 W. Greenfield Ave., Milwaukee 1, Wis. . . . or for more information check CP 3356 on handy form, pages 2 and 3.)



bucket elevators



THE JEFFREY

ESTABLISHED 1877

MANUFACTURING CO.

Columbus 16, Ohio

sales offices and distributors
in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

**IF IT'S MINED, PROCESSED OR MOVED
...IT'S A JOB FOR JEFFREY!**

When inquiring check CP 3357 on handy form, pgs. 2-3

ALVEY Conveyors

In The Warehouse

Save Handling Time

Both IN
and OUT



Every time you MANhandle a package you add to the cost of your product, and nothing to its value. Therefore, it will pay you to let Alvey Engineers show you how direct savings can be made in your plant.

You are sure to benefit from the experience which qualified Alvey Engineers can offer you. Write or phone for an appointment.

ALVEY CONVEYOR MFG. CO.
9308 Olive Street Road, St. Louis 24, Missouri

BRANCH OFFICES IN PRINCIPAL CITIES

ALVEY

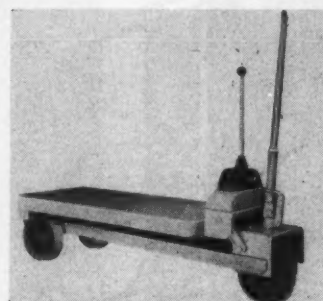
When inquiring check CP 3358 on handy form, pgs. 2-3

MATERIAL HANDLING

**Streamline, simplification
are lift truck
features**

Improved lift truck (1953 Load Lift), featuring streamlining and simplification and incorporating the same interchangeable mechanical and hydraulic features of previous models, has been announced by lift truck manufacturer.

Hydraulic system is non-leaking, even when truck is on its side. Front axle support assembly and



Hydraulic system won't leak

fifth wheel is now made of certified malleable iron instead of welded steel and incorporates the pivot for the handle hold up bracket. This design eliminates the swivel collar and set screw. Upper head has been reinforced.

Front link shaft has been eliminated and both ends of front link furnished with hardened bushings. New type of steel multi-ribbed wheels have also been added.

Optional equipment includes heavy-duty brake on front wheels for negotiating inclines and heavy-duty, double ball bearing fifth wheel for rough service.

Other optional equipment includes special widths, extra high lifts, up to 10,000-lb capacity, swivel casters, wheels filled with oil for constant bearing lubrication. Truck is also available for handling single-faced or double-faced pallets and equipped with open end frame design for handling special containers, skids, and pallets.

(Development of The Market Forge Co., Dept. CP, Everett 49, Mass. . . or for more information check CP 3359 on handy form, pages 2 and 3.)



Sacking Free Flowing

Chemicals in Volume Production...

No one as yet has improved upon the smooth combined fill, weigh and check principle in the packaging of free flowing chemicals. With the right floor plan, the right equipment and well trained manpower this type of operation will turn out more tons per hour per man at less cost than any heavy packaging operation of like character. Such an operation always assures uniform bags, controlled costs and adequate tonnage from bulk to bag. Constantly improved and field tested EXACT WEIGHT Sacking Scales have been doing this type of packaging for more than 37 years. The fact that more of these units have been sold, both here and abroad, this year proves their worth. Write for full details for your sacking operations.

Bagging midwestern superphosphate. Three EXACT WEIGHT Sacking Scales are the heart of this smooth ton after ton operation.

THERE IS
NO
SUBSTITUTE
FOR
EXACT
WEIGHT



EXACT WEIGHT Sacking Scale Model No. 2224—Features pedestal mounting for more room for bag handling; revolving dial visible from any working angle; dust exclusion dashpot for trouble-free operation; new lock-jaw bagholder—capacity to 150 lbs.

EXACT WEIGHT SCALES

BETTER QUALITY CONTROL
BETTER COST CONTROL

THE EXACT WEIGHT SCALE COMPANY

904 W. Fifth Ave., Columbus 8, Ohio
2920 Bloor St. W, Toronto 18, Canada

When inquiring check CP 3360 on handy form, pgs. 2-3

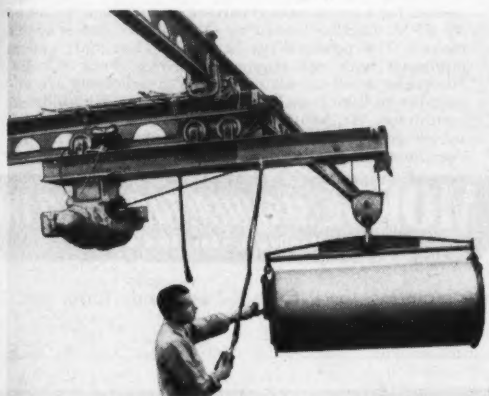
CHEMICAL PROCESSING

Cantilever arrangement on overhead carrier takes loads beyond end of crane

Uses: Carrier designed for situations requiring handling of materials in areas between roof-supporting pillars that cannot be normally covered by cranes, and also suitable for carrying materials through doorways.

Features: Cantilever arrangement permits unit to handle loads beyond the end of the crane on which the carrier operates.

Description: Extension feature of the crane as shown in illustration permits hoist to reach out as much as 2 to 2½" beyond crane's end. When it is necessary to travel crane for some distance on its run-



1500-lb loads handled beyond end of crane

way, carrier is moved from the crane end to permit safe clearance of the columns. Unit has 1500-lb capacity, although other cantilever carriers of different load capacities and reach can be made to suit conditions involved.

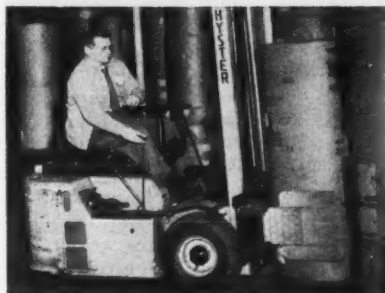
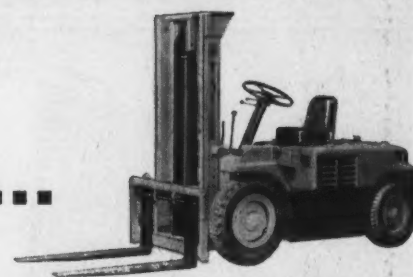
(Development of the Cleveland Tramrail Div., Dept. CP, Cleveland Crane & Engineering Co., Wickliffe, Ohio . . . or for more information check CP 3361 on handy form, pages 2 and 3.)

134-page catalog on wire cloth belting tells uses, features, description

Bulletin reports uses, features and description of wire cloth belting. Flow sheets for various industries, engineering tables and formulas, suggestions on selecting, installing and aligning the belt are also included, supplemented by engineering drawings. Large, clear photos show wide varieties of applications as well as illustrating types of belt weaves. Characteristics, description and recommendations for different types are given. Catalog is amply indexed.

Catalog of woven wire cloth belts for conveying and treatment of industrial products is issued by The Cambridge Wire Cloth Co., Dept. CP, Cambridge, Md. When inquiring specify CP 3362 on handy form, pages 2 and 3.

To all basic HYSTER TRUCKS...



Paper-roll Load-Grab



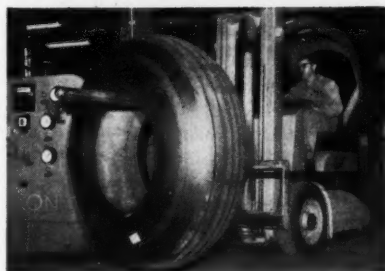
Karry Crane with Boom Extension



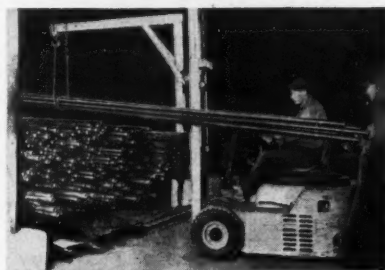
4-Barrel Load-Grab



Scoop—for loose aggregates.



Ram—for tires, rolls, spools, etc.



Boom—for odd shapes, light crane work.

you can add...

HYSTER attachments

and do scores of jobs
quicker...at less cost!

Are your materials hard-to-handle? The right Hyster® Truck Attachment—and Hyster offers more than 100 of them—frequently is the key to greater profits.

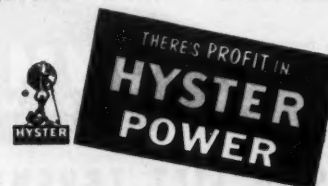
Whether your product is in the form of bales, boxes, bricks, barrels, buckets, aggregates, rolls or cylinders, your Hyster Lift Truck and the right attachment is the most effective answer to the problem of moving materials which cannot be handled with pallets.

Your Hyster Dealer is a specialist in reducing materials handling costs. He can recommend the correct lift truck practices for your materials.

Make the Hyster Lift Truck your basic materials handling tool—to it add the right cost-reducing attachments. Call your Hyster Dealer today, or write for Catalogs 1266, 1219, 1258 to:

HYSTER COMPANY

2937 N. E. Clackamas Street Portland 8, Oregon
1037 Myers Street Danville, Illinois



Be Sure to Call HYSTER Before You Buy ANY Lift Truck!

HYSTER COMPANY • FOUR FACTORIES: • Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands

When inquiring check CP 3363 on handy form, pgs. 2-3



Stacking a stabilized load of weather-protected cans at United Can & Glass Co., Hayward, Calif.

TOWMOTORS
IN ACTION
IN U. S.
INDUSTRY

Use your air rights...

on pier, in plant, outside or warehouse-wide... let Towmotor stack space-eating loads, up where you've storage capacity to spare. Speeding the handling of all materials, Towmotor saves its cost in a matter of months—then *you* profit by that big earning power throughout many busy years. You'll see the proof, right from the start, in stepped-up output per man-hour. Chart your course for maximum production with the help of a copy of "Man-Hour Thieves." Write for yours *now* and name of your nearest Towmotor Representative. Towmotor Corporation, Div. 2309, 1226 E. 152nd St., Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG®

FORK LIFT TRUCKS and TRACTORS

SINCE 1919

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

When inquiring check CP 3364 on handy form, pgs. 2-3

MATERIAL HANDLING

Flexibility is keyword in overhead chain conveyor...

steel tubing reduces weight of required track

Uses: For conveying of materials for manufacturing, assembling, processing, painting, plating, and drying.

Features: Conveying system is extremely flexible. Any combination of turns can be obtained by joining horizontal, vertical top and vertical bottom curves together for added flexibility.

Description: All curves of the Chainveyor have 15" inside radii. Use of tubing reduces weight of track required for given load. Track sections, in 10 and 20' increments and capable of supporting up to 400 lb, are joined by simple welding operation. All curves, wheels, chain side links and carrier pendants are hardened for wear resistance.

(Development of the United States Spring & Bumper Co., Dept. CP, 4951 Alcoa Ave., Los Angeles 58, Calif. . . . or for more information reader may check CP 3365 on convenient Reader Service slip between pages two and three.)

Check-list helps solve handling problems

A materials handling check-list, designed to aid plant personnel evaluate their own materials handling system, is included in the third issue of new publication by a consulting engineering firm.

Under such section headings as Labor, Materials, Equipment and Costs are such questions as "Do skilled operators or assemblers waste time in handling materials?", "Where is material placed in relation to operator and operation?", "Do you have production delays due to poor delivery and removal?", and many others. In all, thirty questions are posed in the materials handling check-list.

Copies of "Industry Ideas" may be obtained from Wheeler Associates, Inc., Dept. CP, 15017 Detroit Ave., Cleveland 7, Ohio. When inquiring specify CP 3366 on handy Reader Service slip, pages 2 and 3.

The Portable MORSE ROTATOR

CUTS COSTS OF:

- MIXING
- BLENDING
- TUMBLING
- CLEANSING

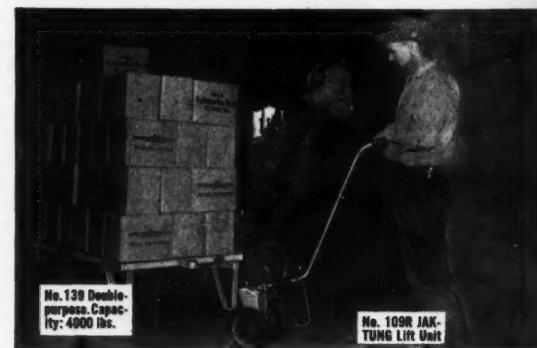


MODEL 500

A powerful, compact motorized unit that will cut costs of mixing, tumbling, cleaning, etc. Scientifically engineered for smooth, safe revolving at speeds of 10, 20 or 40 RPM. Can be loaded by ONE MAN and is easily moved. The power drive has a 3/4" dia. shaft and is equipped with self-aligning bearings. Four 4" dia. Neoprene drive wheels with idler attachments are adjustable to take from 1 to 55 gal. drums or cylindrical containers. Wt. before crating 137 lbs. Furnished with motor, gear reduction unit and tipping lever. Write for complete information.

MORSE MANUFACTURING CO. INC.
757 West Manlius St. East Syracuse, N. Y.

When inquiring check CP 3367 on handy form, pgs. 2-3



Thomas JAK-TUNG One-Handling System

TRUCKS & STORES LOADS WITHOUT UNLOADING

This double-purpose truck is designed for use with power truck or hand lift. When loads are to be moved long distances, a power lift platform or fork lift truck is used. For short hauls, spotting of loads and handling in close quarters, the JAK-TUNG Lift Unit is best. Either way loads can be trucked and stored without costly rehandling. Available with chemical resistant tires and "Job Suited" superstructures.



Send for free literature.

THOMAS TRUCK & CASTER CO.
412 Mississippi River, Keokuk, Iowa

When inquiring check CP 3368 on handy form, pgs. 2-3

CHEMICAL PROCESSING

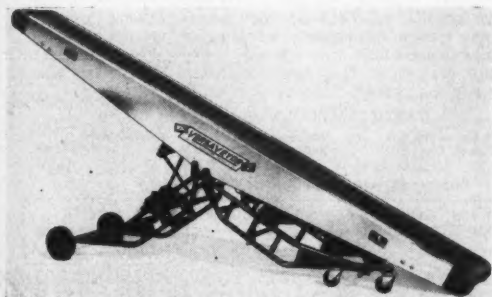
MATERIAL HANDLING

Moving, stacking bags and boxes becomes a simplified job in close areas

Uses: Handling bags and boxes in warehouse storing and stacking, truck and boxcar loading and unloading, floor-to-floor moving of materials.

Features: Unit works on stairways (without undercarriages) or in narrow aisles, and is easily positioned and operated.

Description: Lengths of the Model R Versaveyor are 13, 15, 17, and 19', overall. Also available on request are 21, 23 and 25' lengths for floor-to-floor applications, without undercarriages.



Operates independently or can be used to feed gravity conveyors

The 13' unit weighs approximately 200 lb without undercarriage; with both undercarriages, 375 lb. Unit is made of heat treated aluminum alloy, has a distributed operating load capacity of 300 lb, unit load of 150 lb. Belt is of rough top, 3-ply, 12" wide, although smooth surface belt with rubber cleats is also available.

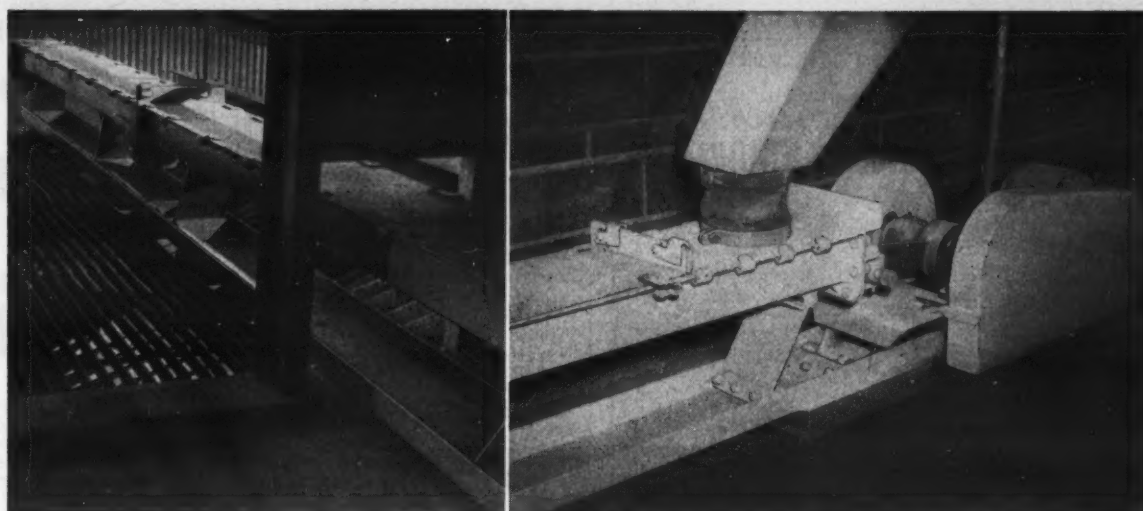
Power unit is $\frac{3}{4}$ hp, 1725 rpm, single-phase motor. Three-phase, totally enclosed motor also available. Stop, start and reverse direction of belt can be accomplished from either side and at either end. Undercarriages are of welded steel, tubular construction. Elevating cranks can also be operated from either side. (On 19' model, unit can be tilted at 45° angle, raising one end to 13½'.)

(Development of The Belt Corp., Dept. CP, 8220 Stahl Rd., Orient, Ohio . . . or for more information check CP 3369 on handy form, pages 2 & 3.)

Tilting cab, construction features told in truck brochure

New H Series of cab-over-engine industrial trailer tractors, both in gas and diesel, and with 50,000 to 63,000 lb GCW, is described in manufacturer's brochure. Literature illustrates how entire cab of the model tilts forward for maintenance.

Brochure describing cab-over engine models is issued by the Mack Motor Truck Corporation, Dept. CP, Empire State Bldg., 350 5th Ave., New York 1, N. Y. When inquiring specify CP 3370 on handy form, pages 2 and 3.



Left: 57-ft. long Flexmount Oscillating Conveyor with multiple dust-tight discharge gates, distributing material to storage bins. Right: Compact, feed-end-drive assembly of Flexmount Oscillating Conveyor.

For hard-to-handle materials . . . get FLEXMOUNT Oscillating Conveyors now available from stock

IF you need conveyors in a hurry, stop in at your nearby Link-Belt sales office or distributor. Under a new policy, they can offer you stock sections of Link-Belt FLEXMOUNT Oscillating Conveyors. Available in 8, 12 and 18 in. trough widths, they can be combined to make any length desired with no delay for engineering.

The gentle, uniform flow provided by FLEXMOUNT makes it a natural for moving a wide range of difficult-to-handle materials. And you

can utilize the free testing service offered by Link-Belt. With complete laboratory facilities and test units, our engineers can quickly determine whether FLEXMOUNT can serve your requirements.

Or, if your product is one of those listed at right, it means that Link-Belt FLEXMOUNT Oscillating Conveyors have already been successfully applied on this material. Ask your Link-Belt representative for a copy of Book 2478 containing application and selection information.

How Positive Action moves materials



Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle up-

ward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Resonant spring action of resilient legs cuts power requirements to a minimum.

LINK-BELT

FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

LINK-BELT Flexmount Oscillating Conveyors handle many materials efficiently...

Aloxite	Glass, broken
Aggregates	Grains
Aluminum ore sinter	Grit
Aluminum oxide	Ilmenite ore
Asbestos, shredded	Litharge
Ashes	Links, chain
Bands, rubber	Milk, dried
Beans	Magnesium fluoride
Blades, steel	Manganese dioxide
Bolts and Nuts	Mica flake
Bottles, broken	Newspapers, bundles
Buttons	Nut meats
Calcine crystals	Packages
Carbon black, pelletized	Paraformaldehyde, dry
Carborundum	Parts, iron, steel and wood
Castings	Phosphate nodule dust
Clinker	Phthalic flakes
Clips, paper	Punch press scrap
Chrome ore	Resin
Chips, C. I.	Rubber pellets
Chips, steel	Salt
Clay	Sand, foundry
Coal	Sand and gravel
Cocoa beans	Saw dust
Coffee	Scale, mill
Cork	Shale, ground
Cotton seed	Slag
Cullet, glass	Shot, steel
Dolomite limestone	Slugs, steel
Dust collector fines	Stone, crushed
Felt	Sugar
Filter cake	Tanbark
Foundry sand	Turnings, steel
Fuel, hogged	Wood chips
Fullers Earth, spent	

Heavy duty units available for larger capacities and heavy duty applications

When inquiring check CP 3371 on handy form, pgs. 2-3

CONSULT FOR THE BEST
PS Materials HANDLING EQUIPMENT

Item C-465 \$3025
Vertical DRUM LIFTER
For handling open and closed steel drums in vertical position, by crane or hoist. All-steel, with heavily welded chain. Sure-hold safety barrel grip. Saves plant space. Use for either high or low ceiling condition.

Item B-416
CARBOY TRUCK
Item B-416
BARREL CRADLE

Item B-539
All metal PALLET

Item B-591
MULTI-PURPOSE CART

DRUM and BARREL TILT
Item B-721 \$18150
A barrel tilt for controlled, precision dumping or pouring. Ideal for chemicals, solvents, powders, etc. Turns 360° through worm drive. Equipped with two safety type locking devices and all-steel welded yoke. Hand-operated chain drive.

Combination TRUCK and DRAIN RACK
Loads Automatically
Moves barrels or drums, also serves as drain rack. Two styles—with or without detachable handles. Sturdy frame-welded construction. Weight approximately 90 lbs.
Item NS-506 (Handles welded to frame) \$4675
Item NS-506 DH (Detachable handles) \$4895

Item B-703
Industrial DUST PAN

Item B-911
BARREL TRUCK
loads automatically

Item B-330
TRAILER TRUCK
side dump

Item B-746
CORRUGATED BOX
with legs

Item B-927
CORRUGATED STEEL PLATFORM

Item B-470 from \$24.20
BARREL and BOX SKID
All-Steel
This new skid, although much lighter in weight and easier to handle than the old fashioned, chunky wood skids, is made entirely of steel, welded construction and will out-last any wooden skid that was ever made. Will stand up under the heaviest barrel or box. Skid measures 14" wide overall. Attractively priced.

WHEN ORDERING always give "Item" number. All PRICES are f.o.b. Detroit. Prices are subject to change without notice.

DESIGNED AND MANUFACTURED BY
Palmer Shile Co.
16016 FULLERTON AVE., DETROIT 27, MICH.

When inquiring check CP 3372 on handy form, pgs. 2-3

MATERIAL HANDLING

Reverse-reading of dial does scale's math for batches . . .

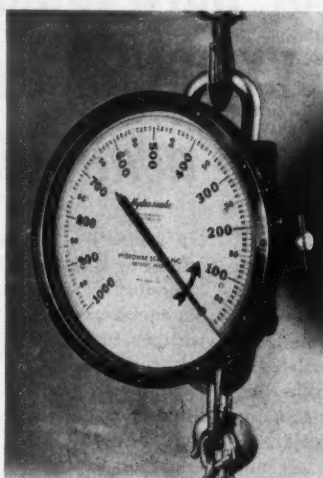
weighing device does subtraction, and other computations

Uses: Scales are suitable for measuring pour-off in batching operations.

Features: No subtraction or computation is necessary, since reverse reading dial is designed to take care of this.

Description: In 500 and 1000 lb capacity models, and with 12" dial, scales are equipped with reverse-reading setup.

When a full container is lifted and the pointer takes position, operator resets the dial so that "O" coincides with the pointer by turning a convenient adjust-



When using scales shown above no subtraction is necessary in batch weighing

ment control. As contents are poured off, pointer retreats, registering directly the amount of decreased weight. After one pour, dial may be reset at "O" for the second pour, etc. Dial then can be reset to "O" for full 360°. A stand is available for holding scale when not in use.

(Development of Hydroway Scales, Incorporated, Dept. CP, 20624 West 8 Mile Road, Detroit 19, Michigan . . . reader may secure more information about this product by simply checking CP 3373 on convenient Reader Service slip between pages two and three.)

**NOW for the first time!
At low cost**

MORE PROFITS!

with



FEATURES

SIMPLICITY—Engineered to eliminate complicated, fast wearing parts, Chainveyor is revolutionary in simplicity of design. • **TRACK**—1½" x ½" slotted steel tube easily installed with minimum support. • **CHAIN**—Full ball bearing wheels mounted on steel side links, heat-treated for long life. • **CURVES**—15" radii provides extreme flexibility. • **TAKE-UP**—Adjustable spring take-up automatically maintains uniform chain tension. • **VARI-SPEED DRIVE**—Positive sprocket tooth drive with easily replaceable shear pin protection. • **CAPACITY**—30# per pendant at 6" intervals, 60# at 12" intervals when supported by 2 pendants with cross bar attachment.—up to 400# chain pull.

DISTRIBUTORS

Mathews Conveyor Co. San Carlos, California
Mathews Conveyor Co. West Coast
Elwood City, Pa. Branches in all principal cities
Conveyor Systems, Inc., Chicago, Ill.

If your conveyor requirement falls within its capacity . . .
INVESTIGATE CHAINVEYOR. It is truly revolutionary in the materials handling field. Write today for full information. Dept. A

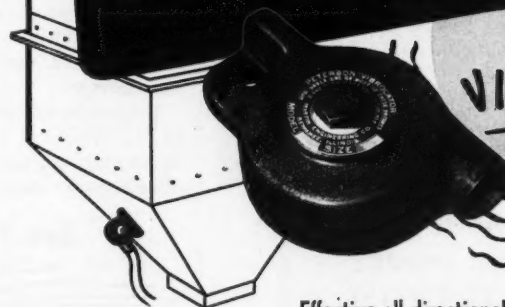
UNITED STATES SPRING & BUMPER CO.

4951 Alcoa, Box 2475 Terminal Annex
Los Angeles 58, California

When inquiring check CP 3374 on handy form, pgs. 2-3

**DO YOU HAVE A HOPPER
FEEDING PROBLEM?
HERE'S THE ANSWER...**

**THE
VIBROLATOR**



Rugged, effective vibration without damage to your bins and hoppers when you use the patented Peterson pneumatic VIBROLATOR.

Effective all-directional vibration for moving stubborn materials in hoppers and bins. Instantly self-starting, no lubrication or maintenance needed. A variety of sizes available to meet all applications. Whatever your vibrator requirements, there's a Peterson Vibrolator to fit the job and do it more efficiently.

MARTIN ENGINEERING COMPANY
KEWANEE 3, ILLINOIS

When inquiring check CP 3375 on handy form, pgs. 2-3

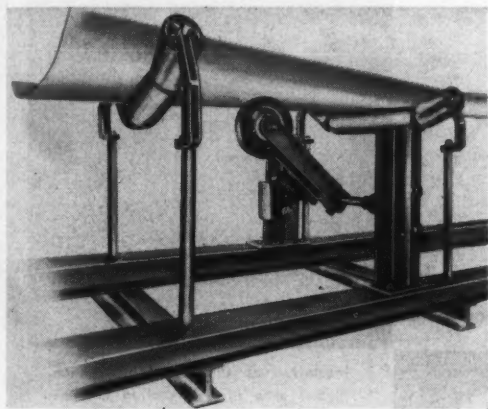
MATERIAL HANDLING

Conveyor-activated switch controls regulate production

Uses: For use on belt conveyors in mines, quarries, industrial plants that use solenoid valves, conveyor overloading signals and remote control operations. Both models can start and stop primary and secondary conveyors automatically.

Features: Both controls are conveyor-activated. Automatic operation results in reduced operating costs through shutting down conveyors which would needlessly remain in operation.

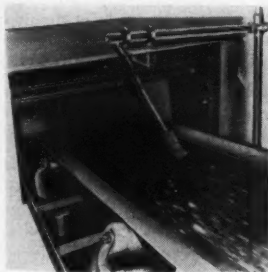
Description: Model UB automatic conveyor control is designed for operation and installation under the belt and is especially useful with belts



Useful with belts carrying coarse, abrasive materials

conveying coarse, abrasive or lump material. Control is mounted beneath the belt on a spring-loaded shaft which exerts light tension on the shaft arm and the master wheel rolling against the belt. A deflection of as little as $1/16$ " on belt actuates the limit switch arm.

Three adjustments are available for easy installation. Shaft and brackets will fit standard size conveyors from 16 to 48" wide. Shafts for wider conveyors are available.



Suited for fine materials

The other control device, Model 4A, is installed over conveyor belt. It opens and closes the switch control by means of a paddle arm. This type is recommended primarily for fine, lightweight materials

which would not deflect the belt, or for use on chutes, pan and roller conveyors. Control comes complete to fit any size conveyor belt.

(Both models developed by the Johnson-March Corp., Dept. CP, 1726 Chestnut St., Philadelphia, Pa. . . . or for more information check CP 3376 on handy form, pages 2 and 3.)

MOTO-TRUC

Designed for...



Pallet type "Walkie" truck
4000 to 6000 lb. capacity.



Platform "Walkie" type
4000 to 10,000 lb. capacity.

PURCHASING DEPT.
Costs less . . . fits into budgets . . . economical.

✓ ENGINEERS . . .
Rugged, all welded construction . . . constant traction . . . stabilized 4 point load support on Hi-Lift . . .

PLANT MANAGERS . . .
Small . . . compact . . . minimum operation and storage area . . .

✓ OPERATORS . . .
Simplified operation through "Roller Grip" controls . . . anyone can operate the truck with very limited instruction . . .

✓ MAINTENANCE MEN . . .
Especially designed for quick servicing . . . all parts easy to get to . . .



Hi lift "Walkie" type
3000 to 4000 lb. capacity.



Model G. A. Tractor.

Regardless of individual titles, it will pay you to get ALL the facts on MOTO-TRUC . . . and there's a MOTO-TRUC for every purpose.

SEND FOR BULLETIN NO. 51





MOTO-TRUC
Designers FOR THE INDUSTRY
PATENTED

The MOTO-TRUC Co.

Representatives in Principal Cities

1948 E. 59th St. • Cleveland 3, Ohio

Pallet . . . Platform . . . Hi-Lift Trucks

LARGEST EXCLUSIVE MANUFACTURER OF "WALKIES"

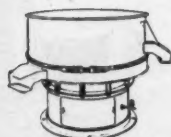
When inquiring check CP 3377 on handy form, pgs. 2-3

Easily adjustable for Perfect Screening of any material...

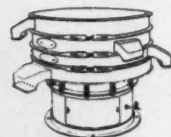


GRAINS
WOOD PRODUCTS
FOODS
MEAT PRODUCTS
DRUGS
BLOOD
CERAMICS
PIGMENTS
BRICK AND TILE
SAND AND GRAVEL
PULP AND PAPER
WASTE DISPOSAL
METALLIC AND
NON-METALLIC ORES
ORGANIC CHEMICALS
INORGANIC CHEMICALS

SWECO spiral process SEPARATORS



Single Deck Screening



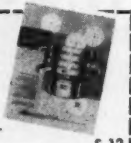
Multi-Deck Screening

The vibration of the SWECO Separator can be changed to fit the screening requirements of any material. Speed and turbulence can be controlled *exactly* for maximum throughput of the product whether wet or dry. The exclusive patented single or multi-deck design of the SWECO Separator greatly increases screening surfaces and reduces floor space requirements. No special foundation or base required for instant production because there is no transmitted vibration. For full information write today for Bulletin 12-3.

SEPARATOR DIVISION
SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Ave., Los Angeles 58, California
Cable Address: "SWECOLA"

SEPARATOR DIVISION
SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Ave., Los Angeles 58, California
Gentlemen: Please send me complete information,
Catalog and Data File 12-3

NAME _____
ADDRESS _____



S-12 I

ideas

High Heat Resistance Displayed by Foamed Silicone Resins

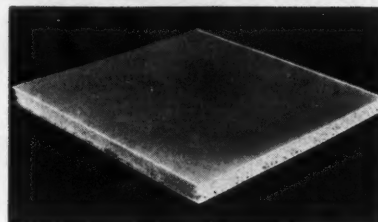
Tests indicate that foam will retain its properties for long periods at temps in range of 500°F



Insulation of silicone foam is such that 1 side of 1/2" section can be heated until it is cherry red without making other side too hot to touch



Before and after . . . liquid mix of Dow Corning XR-544 Resin is poured over a silicone-glass laminate in a heated form (above), covered with another sheet of silicone-glass laminate, and foamed in place to make a sandwich structure (below) that is light in weight and shows remarkable heat-stability and retention to compressive strength. These sandwich structures are not only extremely light in weight, but can be fabricated in a variety of foam densities (from 12 to 18 lb/cu ft) by adjusting the curing time and temperature



EXPANSION to form uniform, unicellular structures weighing only 8 to 24 lb/cu ft is one of the more interesting and useful properties of two silicone foaming resins. A noteworthy feature of such structures when exposed to temperatures of 700°F for over 20 hours is their minimal structural or dimensional change. Sections of the silicone foam only half an inch in thickness can be brought to a red heat over a direct flame without softening or showing significant decomposition. These and other properties suggest use of "sandwich" constructions, reinforcements foamed in place, or parts machined from blocks of silicone foam in such applications as: fire-walls; thermal, electrical, and acoustical insulation; and heat-stable buoyant structures.

XR-543 Resin

A clear, 100 per cent solids, silicone material (supplied as a brittle solid), XR-543 Resin readily melts on heating to 280-300°F. Once

When inquiring check CP 3378 on handy form, pgs. 2-3

melted, it can easily be stirred with a mechanical mixer while adding the blowing agent and catalyst. The hot molten material can then be transferred to the desired size container and heated for the required time at 300°F to produce a foam density of 14-18 lb/cu ft; at 320°F to produce a foam density of 10-12 lb/cu ft. The temperature can then be gradually raised and the foamed resin given a final cure. Some of the typical properties of the solid resin are listed in the following table:

Properties of Solid XR-543 Resin

Solids content, % minimum	98
Color	Light amber
Melting point, °F	230
Specific gravity	1.17
Solubility	Soluble in toluene and aromatic solvents, alcohols, and most lacquer solvents

Properly handled, the resin produces a uniform, unicellular foam having a small spherical pore structure. Cured foams can be carved or cut with conventional woodworking tools to any desired shape. Properties of the foamed resin are summarized in the following table:

Properties of Foamed XR-543 Resin

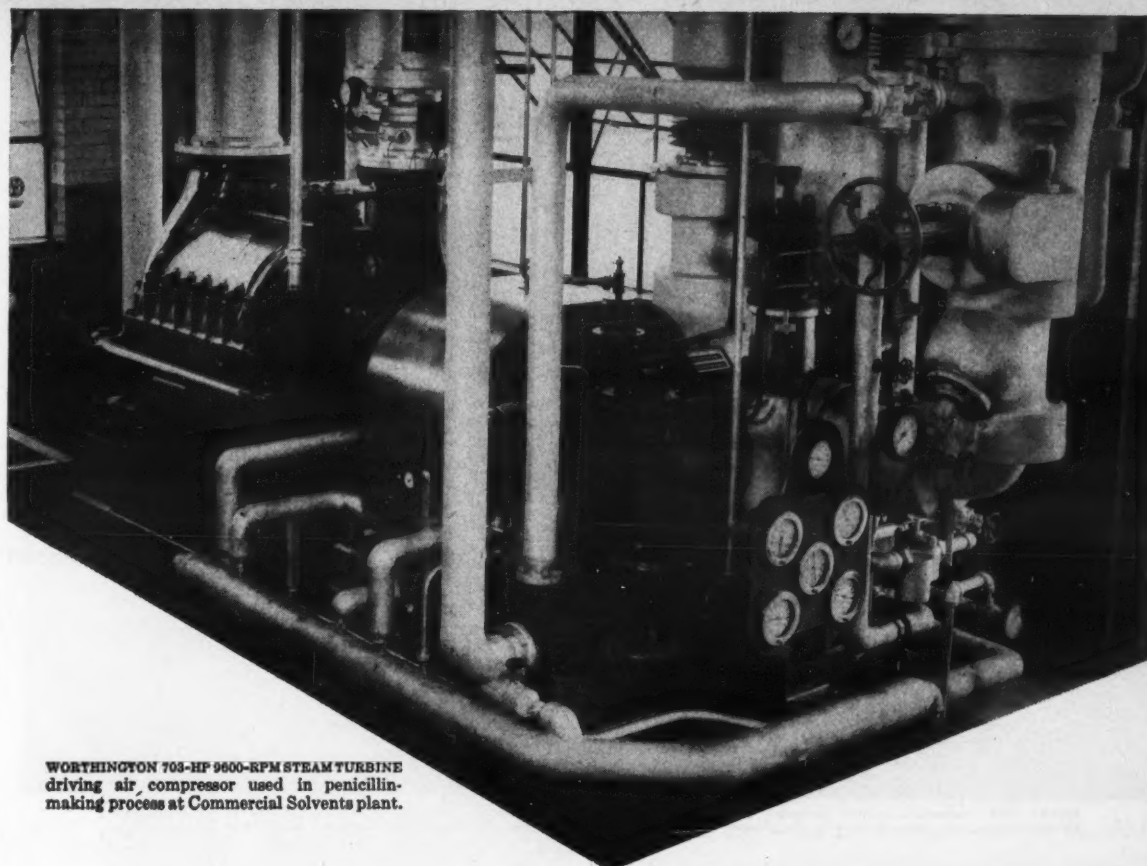
Density, lb/cu ft	10-14
Cell size, inches	Less than 0.008
Compressive strength, psi	
at 77°F	100-250
at 500°F	15-30
Weight loss, %	
after 220 hr @ 480°F	0.41
after 220 hr @ 570°F	1.71
Moisture absorption, %	
after 7 days at 96% R.H.	Less than 0.05
Heat distortion temperature, °F	Greater than 700
Dielectric constant @ 10 ⁵ cycles	1.18
Power factor @ 10 ⁵ cycles	0.0005

Properties of this material suggest its use in applications where extreme temperature resistance is required, and high compressive strength is not essential. At room temperature, foamed XR-543 Resin possesses very good compressive strength, but at temperatures in the range of 500°F the material is more thermoplastic than manufacturer's other foamed resins. It becomes resilient and loses considerable of its compressive strength without noticeable change in structure or appearance. This characteristic can be used in forming foamed resin to a desired shape prior to the final cure.

XR-544 Resin

In contrast to its companion compound, XR-544 Resin not only has good compressive strength at room temperature, but also retains a high ratio of this strength at temperatures in the range of 500°F. This and other properties suggest its use in applications where both high strength at elevated temperatures, and extreme temperature stability are essential. Such applications include foamed-in-place sandwich

(Continued on next page)



WORTHINGTON 705-HF 9600-RPM STEAM TURBINE driving air compressor used in penicillin-making process at Commercial Solvents plant.

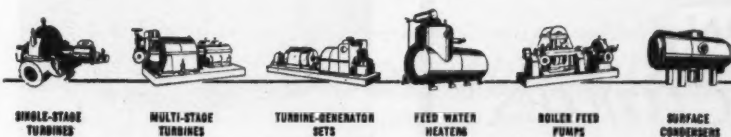
9600-rpm turbine drives compressor in making penicillin for Commercial Solvents Corp.

Two years ago, a Worthington high-speed steam turbine was installed in the Terre Haute, Indiana, penicillin plant of Commercial Solvents Corporation. Its high efficiency and economical steam consumption plus its low maintenance demands have justified that selection many times over.

In addition, use of Worthington high-speed, direct-drive turbines to drive centrifugal compressors or blowers makes possible a broad speed range, elimination of costly speed increasing gears, and adaptability to various governing arrangements for precise control under all operating conditions. Worthington's design flexibility provides you with the *right* type and size turbine for optimum performance—regardless of your requirements.

Remember, when you're considering turbines for driving compressors, the engineering of the turbine is just as important as the engineering of the compressor. Worthington's long and complete experience in compressor-drive engineering is your assurance of maximum efficiency. Write for Bulletin 1966 to Worthington Corporation, Steam Turbine Division, Wellsville, N. Y.

T-2-19



A GREAT TEAM IN STEAM



When inquiring check CP 3379 on handy form, pgs. 2-3



Spheres "Bed" Perfectly in catalytic processing. In Norton Spherical Catalyst Supports you get uniform beds that promote uniform flow of

gases and assure minimum pressure drop. Spheres are available in sizes 3/16" to 1". Supports in Ring and Pellet form in sizes 1/8" to 2".

Catalyst supports to your special prescription

... Norton engineered for your special requirements

Where catalyst supports were applicable Norton engineers have been successful in meeting the requirements of a large variety of conditions.

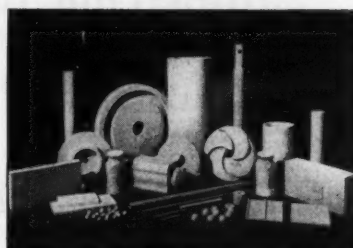
Over 40 years' experience in research and developments of special refractory materials and mixtures have enabled Norton to tailor special refractory mixtures to meet the requirements of the chemical industry.

ALUNDUM® Catalyst Supports are a good example. They have such qualities as great refractoriness, chemical inertness, strength and high resistance to abrasive action. They are made by Norton's exclusive "controlled structure" process. It provides

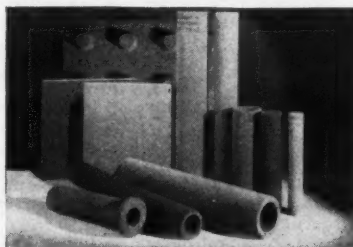
medium porosity of 30-35% with rough open structure for maximum adherence of catalyst, or high porosity 42-47% with large connected internal pores, uniformly dispersed for maximum deposition of the catalyst.

Test them yourself

See what Norton ALUNDUM Catalyst supports can do for you. If you would like to see samples, see your Norton refractories representative or write Norton Company, 568 New Bond Street, Worcester 6, Mass. Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.



Norton Exclusive Fused Stabilized Zirconia, an amazing material able to take temperatures double the melting point of most metals. No other refractory is so chemically stable at such high temperatures. (Up to 4700°F.) Ask for Bulletin 793.



Norton Exclusive. Norton ALUNDUM Seamless Tubes for filtration, aeration, diffusion maintain constant air or liquid pressure. ALUNDUM porous mediums also available in plates, discs and diaphragms. Ask for Bulletin No. 140.

NORTON

Special REFRACTORIES

Making better products to make other products better

NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

When inquiring check CP 3380 on handy form, pgs. 2-3

IDEAS

(Continued from preceding page)

constructions using silicone-glass laminate as the outer layers. Properties of the solid resin:

Properties of Solid XR-544 Resin

Solids content, % minimum	98
Color	Amber
Melting point, °F	230
Specific gravity	1.17
Solubility	Soluble in toluene and aromatic solvents, alcohols, and most lacquer solvents

Expansion can be controlled to yield foam densities ranging from 8 to 24 lb/cu ft. Heated for the required time at 300°F material produces a foam density of 10-12 lb/cu ft; at 285°F it produces a foam density of 18-20 lb/cu ft. Following are the properties of the foamed material:

Properties of Foamed XR-544 Resin

Density, lb/cu ft	8-24
Cell size, inches	Less than 0.008
Compressive strength, psi	
determined on foamed resin having	
18-20 lb/cu ft density	
at 77°F	500-800
at 500°F, after 1/2 hr exposure	100-240
at 500°F, after 200 hr exposure	90-200
at 700°F, after 1/2 hr exposure	50
Weight loss, %	
after 220 hr @ 480°F	0.15
after 220 hr @ 570°F	0.52
Moisture absorption, %	
after 7 days at 96% R.H.	0.032
Heat distortion temperature, °F	Greater than 700
Dielectric constant @ 10 ⁵ cycles	1.4
Power factor at 10 ⁵ cycles	0.00027

By-products evolved in the foaming process for either resin are not toxic, but it is recommended that adequate ventilation be provided.

(Resins XR-543 and XR-544 are available in limited quantities for development research and are products of Dow Corning Corp., Dept. CP, Midland, Mich. . . . check CP 3381 on form, pages 2 and 3.)

Process stabilizes dimensions of cellulose fibers

permanent impregnant keeps moisture from getting into product and causing it to swell

Cellulose fibers may be stabilized against dimensional changes resulting from humidity variations by treating them with chemical compounds having two or more hydroxyl groups, at least one of which may be part of a carboxyl group . . . according to a recent process patent. Appearance of treated material, be it wood, wood products, paper, linen or cotton, is said not to be appreciably altered. The desirable property of low density is retained, while acoustical and insulating properties, if any, are not diminished.

Process is based on the use of chemical compounds which resemble the chemical structure of cellulose and water, and which attach themselves permanently to the cellulose so as to prevent moisture from enter-

ing and swelling the fibers. Best success has been obtained with monoesters of glycol dicarboxylic acid, a by-product of alkyd resin manufacture.

In one experiment, a fiber board containing 50% of glycol aconitic acid monoester lost 95% of its original expansion and contraction, and its water resistance was increased four times over that of an untreated sheet. This treating compound, made by reacting equimolecular parts of diethylene glycol and aconitic acid, was a viscous, straw-colored liquid, readily soluble in water.

Equally effective monoesters are triethylene glycol adipic acid, pentaethylene glycol succinic acid, glycerol citric acid, and propylene glycol sebacic acid monoester. Partial esters of polyhydric alcohols and polycarboxylic acids are also suitable for use as the treating chemical.

Most of the glycol dicarboxylic acid monoesters are either solids or highly viscous liquids, so they must be dissolved in a suitable solvent before they can be used. These solvents can be readily removed by application of heat after the treatment.

Impregnation must take place throughout the mass of the cellulose material. Simplest methods of application are immersion and spraying.

In the case of wood products, the stabilizer can be introduced into the fibers from which the board is made, into the individual plies of a laminated product, or into the final laminated assembly itself. Heavy wood members require soaking for a period of time, but vacuum impregnation will speed up the step.

In paper making, the stabilizing compound can be put either into the head box of the Fourdrinier machine, into a tub sizing bath, or into the water box of the calender stack.

In certain applications, fixation of the stabilizing compounds can be improved by using them in combination with thermosetting resins. After curing, these resins are believed to cover and protect compound from solvent attack. They increase hardness and water resistance of impregnated material.

(Licensing is being done through company developing the process, The Upson Company, Dept. CP, 43 Upson Point, Lockport, N. Y. . . . or for more information check CP 3382 on handy form, pages 2 & 3.)

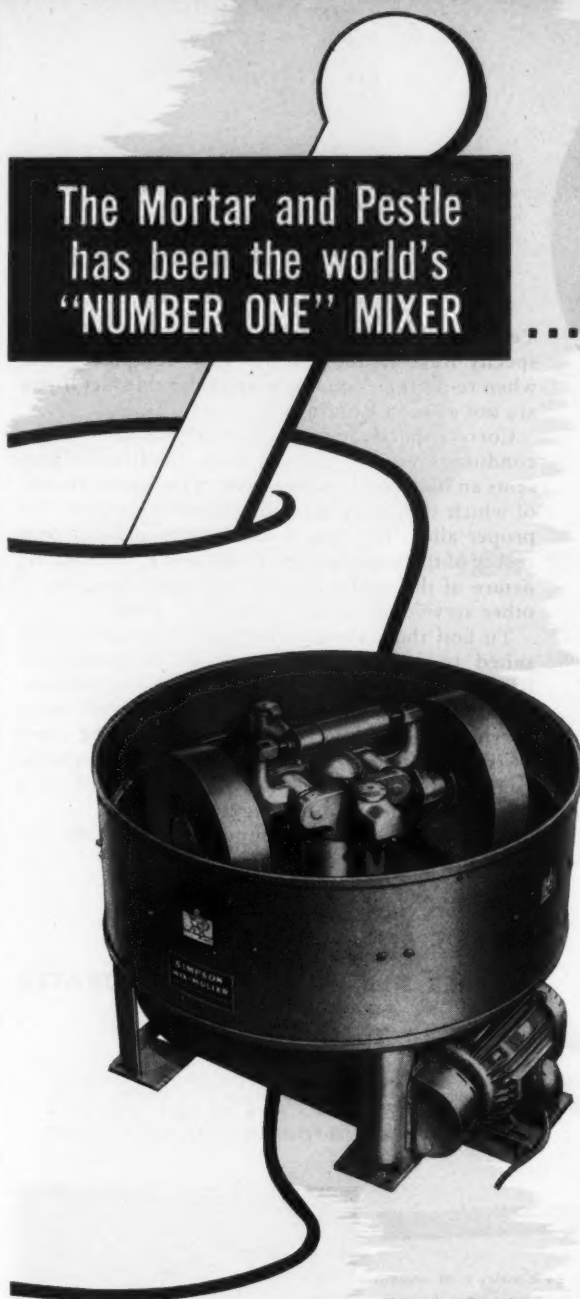
Open color laboratory to service industry

A new customers' service laboratory, designed to offer technical assistance in meeting individual color requirements of the protective coating and printing ink industries, has been officially opened. Chief function of the lab will be analyzing color problems and providing colors to meet individual specifications. The lab is equipped with the latest research and testing facilities and, in addition, is equipped with color dispersing apparatus, a spray booth, a GE spectrophotometer for determination of color values, and fadometer and weatherometer units.

(Information courtesy of the Hilton-Davis Chemical Company, division of Sterling Drug Incorporated, Dept. CP, Cincinnati, Ohio.)

The Mortar and Pestle has been the world's "NUMBER ONE" MIXER

...BUT WHY LIMIT ITS USE TO YOUR LABORATORY?



SINCE the days of the ancient Greeks, the *mortar and pestle* has been one of the primary means of preparing materials where intimate blending is vital. The rubbing, smearing action accomplished in a mortar and pestle is the basis for present-day mixing practice . . . although *all* mixing equipment does not produce these desired results. In processing work, true *intensive* mixing is called *MULLING*, because it can be accomplished only in a muller-type mixer. Here, the components are not merely placed next to each other—but are thoroughly blended together to form a completely uniform, inseparable mass.

Utilizing a special pair of revolving mullers and plows, the SIMPSON MIX-MULLER is designed to duplicate the controlled uniformity which you may now be producing by the mortar and pestle method in your laboratory. Thus, with SIMPSON MIX-MULLERS, you can be sure that your production mixing can be just as carefully and accurately controlled as laboratory or pilot plant mixing. Manufactured in 13 basic models, in batch capacities from 1/10 to 60 cu. ft., SIMPSON MIX-MULLERS may be equipped to meet your processing needs . . . as a reaction vessel . . . for heating or cooling while mixing . . . in stainless or other special metals. Backed by 40 years of specialization in mixing equipment and problems, our engineers will welcome the opportunity of helping you to bring "laboratory control" to your production floor.

Write for literature.



SIMPSON MIX-MULLER® DIVISION

NATIONAL ENGINEERING CO., 624 Machinery Hall Bldg., Chicago 6, Ill.
(Not Inc.)



When inquiring check CP 3383 on handy form, pgs. 2-3

**Don't
Forget to
SPECIFY
REVERE**

CONDENSER TUBES AND PLATES

Year after year users of condenser tubes and plates specify Revere, not only for new equipment, but when re-tubing. You might consider this fact if you are not as yet a Revere customer.

Correct specification is vitally important, because conditions vary so greatly. Each installation presents an individual combination of factors, each one of which should be studied before deciding on the proper alloy. It is often advisable to make a new survey of the situation before re-tubing, because the nature of the cooling water may have changed, or other service alterations have taken place.

To find the alloy or combination of alloys best suited to meet a specific set of circumstances, Revere offers the help of its Research Department, made available through the Technical Advisory Service. Working with the country's leading users of condensers and heat exchangers, these capable consultants have helped solve many and varied types of problems, leading to longer tube life.

Revere makes tubes and tube sheets in all the customary alloys. See the nearest Sales Office.

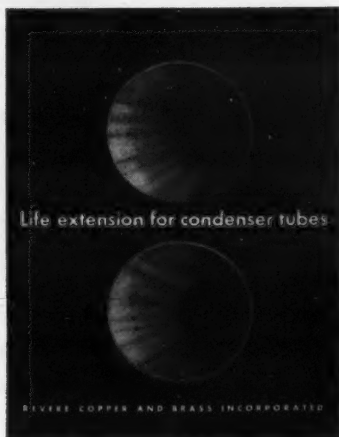
REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;
Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.
SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

This 28-page booklet is of unusual interest in these times when it is more important than ever to squeeze every last day of use out of condenser and heat exchanger tubes. It includes data on various copper alloys, photos of different types of condenser tube corrosion, and photomicrographs of the grain structure of different metals under varying operating conditions. Write on your firm's letterhead for your free copy. Ask for "Life Extension for Condenser Tubes."



IDEAS

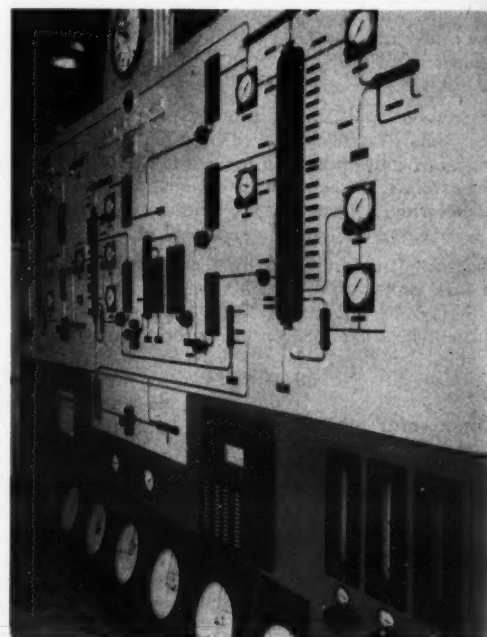
Puerto Rico opens novel plant for pilot work in rum research . . .

will permit extension of program to establish standards of identity and quality

A few months ago a new and ultramodern pilot plant for research in rum manufacture was dedicated in Puerto Rico. Operated by the Agricultural Experiment Station of the Univ. of Puerto Rico, the plant represents a \$500,000 investment and has a capacity of 150 proof gallons of rum per day.

It will permit extension of a program of rum research, initiated in 1945, to establish standards of identity and quality for rum products. The Experiment Station's rum research program has emphasized development of new chemical methods for measuring the quality of rums in order to supplement the reports of taste panels and to guide the progress of other phases of the research program. This work has revealed eight chemical tests which determine the quality of a test run of rum. With the new pilot plant available, every product and process involved in the production of rum will be studied carefully. This study will be directed also to fermentation mash obtained after distillation to determine possible uses as a cattle feed or fertilizer.

A major contribution to the utility of the distilling unit is the use of a graphic panel which is a simplified flow-sheet of the distillation process. Instruments to indicate process variables are incorporated



Graphic panel indicating components of distilling unit

at the point on the control panel which corresponds to the point of measurement in the plant. Two kinds of flow-rate instruments are used:—orifice meters where the flow is adequate, and rotometers

When inquiring check CP 3384 on handy form, pgs. 2-3

with manual control valves where the flow rates are too small for practical automatic control.

Items shown on the graphic panel include three fractionation columns, fusel oil (bad liquor) extraction column, condensers, heat exchangers, and pumps. The various units are connected to indicate the piping actually installed in the plant, and a different color code is used for each type of pipe.

The pilot plant is a three-story building finished in plastered cement and clay tiles. Horizontal lines created by an almost continuous series of plain win-



dows are broken near the east wing by a six-story tower. Faced with red clay tile, the tower houses four continuous column-type stills used to produce the dry, light-bodied rum.

In addition to the experimental distillery, the 107 x 55 foot building brings together under one roof three separate laboratories for chemical, bacteriological and distillatory research. A large taste-testing room for use by taste experts and consumer panels is a feature of the third floor.

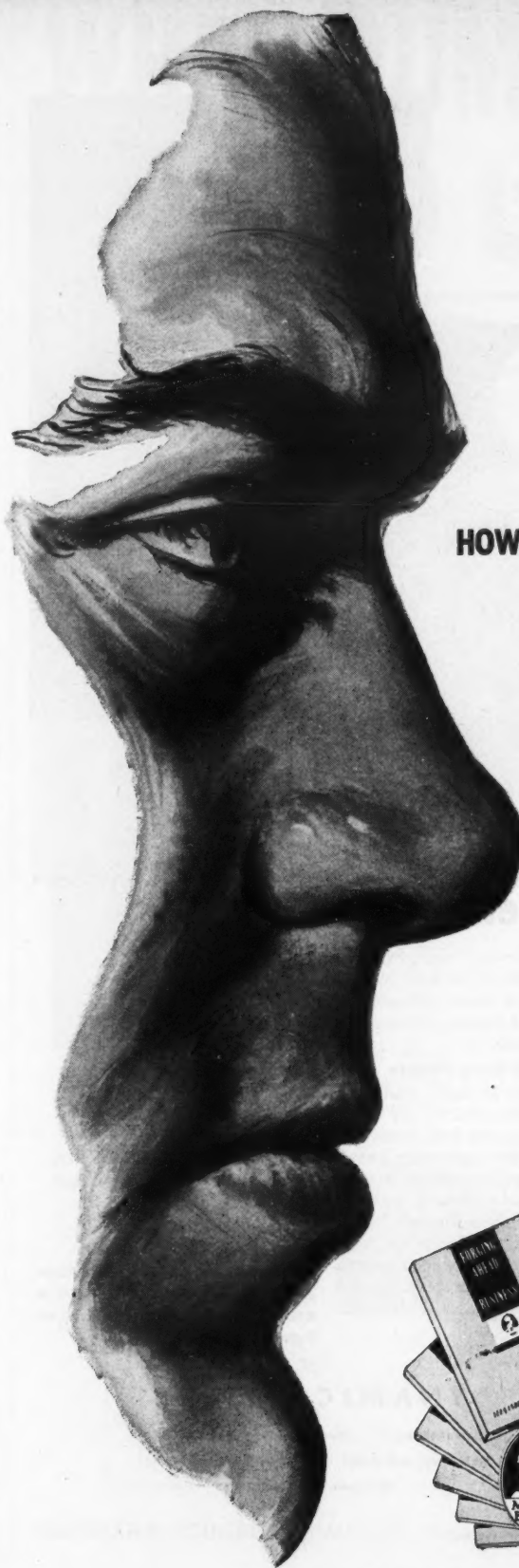
(Information courtesy of A. D. Little, Inc., Dept. CP, 30 Memorial Drive, Cambridge 42, Mass. who designed and installed the distilling unit.)

Hydrometallurgy will be aided by ion exchange . . .

in concentrating dilute metals solutions, removing metals from pulps, and purifying solutions

Applications of ion exchange to hydrometallurgy promise to simplify the working-up of the progressively poorer and more complex ores which must be worked in the immediate future. The unique properties of ion exchangers fill the gaps of other unit operations which are being used in hydrometallurgy. Following is a brief discussion of how the operation is being, and can be, employed in the mining metallurgical industry.

(Continued on next page)



HOW TO SUCCEED WHILE YOU'RE STILL YOUNG

IT SURPRISES many people to learn that the average age of the men who respond to our advertisements is closer to forty than to twenty. But it's not hard to understand why this is true!

Most young men are *satisfied* with their progress in business. Their native ability and energy are enough to win them regular promotions and salary increases. They find success only a matter of time.

But the day comes, often with a shocking suddenness, when this easy and casual progress ends abruptly.

Many a man wakes up with a start in his thirties or forties to find that his income has leveled off, and that promotions have ceased.

"I'm not getting ahead as fast as I should," he says to himself. "Where am I going to be ten years from now?"

Why does this pathetic pattern appear in so many promising careers?

The answer is simple: Sheer ability and energy can carry a man to the mid-way point in business . . . *but only a thorough knowledge of business fundamentals can help him beyond that point.*

If you realize that fact while time is still on your side—and act on it—you can succeed while you're still young.

FREE... "FORGING AHEAD IN BUSINESS"

We do not claim that you must have the Alexander Hamilton Course in order to succeed in business. But we do say that *you cannot succeed without what is in the Course!*

All the Institute does is offer you a convenient and time-saving means of bringing this knowledge to you in your spare time; and in a form that has *proved* to be practical and effective for more than forty years.

So that you may judge for yourself whether or not you think the Institute can help you, we have published an informative 48-page book titled "Forging Ahead in Business."

We believe that this little book will help any man get down to bed-rock in his thinking; however, there's no cost or obligation for it because—frankly—we've never been able to put a price on it that would reflect its true value. Some men have found a fortune in its pages.

If you would like a complimentary copy of "Forging Ahead in Business," simply sign and return the coupon below. It will be mailed to you promptly.



ALEXANDER HAMILTON INSTITUTE

Dept. 202, 71 West 23rd Street, New York 10, N. Y.
In Canada: 54 Wellington Street, West, Toronto 1, Ont.
Please mail me, without cost, a copy of the 48-page book—
"FORGING AHEAD IN BUSINESS"

Name

Firm Name

Business Address

Position

Home Address

When inquiring check CP 3385 on handy form, pgs. 2-3

Case No. 63

Kemp Oriad Dryer Gives "Most Satisfactory Service" Guarding Spencer Control Board



How Kemp assures round-the-clock operation at Spencer Chemical

The Spencer Chemical Co., Charlestown, Ind., operates 24 hours a day, 7 days a week, making nitrogen compounds for the fertilizer industry. Heart of this operation is the master instrument board that controls all plant processes. These instruments are operated by compressed air, which must be dried to prevent rust and corrosion within the controls.

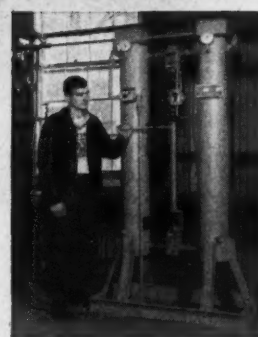
Kemp Offers Continuous Protection

Spencer uses a Kemp Oriad Dryer to dry all the air required and completely protect the delicate instruments from moisture damage. Since its installation in 1950, this Kemp unit has needed no service of any kind. And Spencer is delighted with Kemp's ease of operation! Mr. N. S. Whitaker, Works Manager, commenting on Kemp's

"most satisfactory service," says, "Operation is simplicity itself. All we have to do is switch a lever once a week. Capacity is ample for one week of maximum flow, on a 24-hour 7-day operation."

Kemp Dryers for Every Purpose

Kemp offers a variety of dryer models to meet all problems. Designed to dry air to sub-zero dew points at low cost, these efficient dryers embody the engineering knowledge gained from Kemp's many years of experience. They are available with manual, semi-automatic, or fully automatic tower reactivation. In addition, Kemp will prescribe the proper desiccant for each specific drying job. If you have a problem involving the drying of air, gases, or liquids, contact Kemp engineers now.



Only operation required on Kemp Oriad Dryer is moving lever once a week to switch flow of air to second column. First column is reactivated by heat during the week.

For more complete facts and technical information, write for Bulletin D-27 to: THE C. M. KEMP MFG. CO., 405 East Oliver Street, Baltimore 2, Md.

KEMP OF BALTIMORE



DYNAMIC DRYERS

CARBURETORS • BURNERS • FIRE CHECKS
METAL MELTING UNITS • INERT GAS GENERATORS
SINGING EQUIPMENT

When inquiring check CP 3386 on handy form, pgs. 2-3

IDEAS

(Continued from preceding page)

Concentration of metal values from dilute solutions. Metals can be taken from mine waters, heap leaching or leaching in place, and returned to the process as 10% or higher solutions of the metal salt, at low operating costs. Ion exchange is peculiarly adapted to concentrating constituents present in dilute solutions, and the more dilute, the greater is the economic advantage when compared with chemical precipitation, electrolysis or evaporation.

Separation of metal salts. Ion exchange will probably be economical for separating only metals of high unit value . . . at least until the development of more selective exchangers and better techniques (such as continuous countercurrent adsorption and elution).

Purification of process or electrolyte solutions. Although little work has been done on this, it would seem possible to purify in this manner, because ions are absorbed preferentially. Ferric iron, for instance, should be reduced substantially in the presence of divalent ions such as copper from leaches. Regenerant effluent would contain the ferric iron as sulfate, with the divalent metal sulfates and excess acids.

Metathesis. It is easy to convert salts to acids by ion exchange. For example, it may be desired to convert a sodium salt of a metal anion complex to the corresponding acid or to another salt of the anion, say the ammonium salt. This is done by using ion exchange in the appropriate cycle or by converting to the acid, then neutralizing. If the metal is originally present in cation form as the sulfate, but is desired as the chloride, the conversion is accomplished by use of the anion exchanger chloride, exchanging chloride from the resin for sulfate in solution.

Removing metal values from pulps. If the ion exchanger can be contacted directly with the pulp for adsorption of the metal value, and then separated for elution of the metal from the exchanger, considerable savings in investment, labor, pumping, and loss to tailings may be effected. Such operation will require fine grinding and sand-slimes separation. Thickening and washing operations can then be reduced considerably, since residual metal values can be picked up by the ion exchanger without upsetting solution balance. Equipment for use along this line is being developed.

(Remarks from paper presented before American Institute of Mining & Metallurgical Engineers National Meeting, Los Angeles. Authors A. B. Mindler and C. F. Paulson are with the Special Applications Department of The Permutit Company, Dept. CP, 330 W. 42nd St., New York 36, N. Y.)

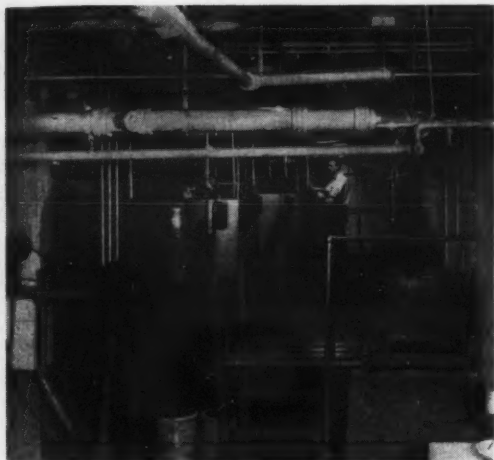
Emery particles are graded in 5 sizes below 25 μ by classification . . .

by making this possible, dispersant cuts bill for fine abrasive at Univas Lens

Addition of 0.1 to 0.2% of a dispersant to an emery abrasives classification system has meant significant cost savings to Univas Lens Company, Dayton, Ohio. The lens-grinding abrasives can

now be graded into five distinct sizes in the range from 9 to 25 microns. Before, classification could not be carried out below a 25-micron size, and the company had to buy the finer grades of emery at considerable expense.

Other benefits result. The classification system stays clean now, while the previous dispersant tended to "slime out." Viscosity of the emery-



Classification system at Univis used in grading lens-grinding emery abrasives

bearing liquid is less and it no longer tends to gel and "fade away" from the glass surfaces during grinding. Finally, lenses are no longer spoiled by scratching with improperly graded abrasives.

(Dispersant, Marasperse N, is a product of Marathon Corporation, Chemical Division, Dept. CP, Rothschild, Wis. . . . or for more information check CP 3387 on handy form, pages 2 and 3.)

HCl obtained as co-product of trichlorethylene process

Manufacture of trichlorethylene, with simultaneous production of pure hydrogen chloride gas . . . development of this process has recently been announced and plans are being made for a plant installation to be completed by April of next year.

The Detrex Corporation and Hooker Electrochemical Company worked together in developing the process, and the proposed plant installation in Ashtabula, Ohio, will be under the banner of Hooker-Detrex, Inc., a New York corporation jointly owned on a 50-50 basis by Detrex and Hooker.

Hydrogen chloride will come from the process as a pure gas in a pipeline, ready for use as a raw material in plastics manufacture. Present plans call for all of it to be sent to a proposed General Tire & Rubber Co. vinyl chloride plant on property adjacent to the Hooker-Detrex plant site.

(Announced by Detrex Corporation, Dept. CP, Detroit 32, Mich.)

WHEN PUMPS WEAR OUT ... WHO IS AT FAULT!

CHECK IN-PLANT SERVICING!

*This Petcock
Saves Early
Pump Replacement*

USE DAILY AS DIRECTED

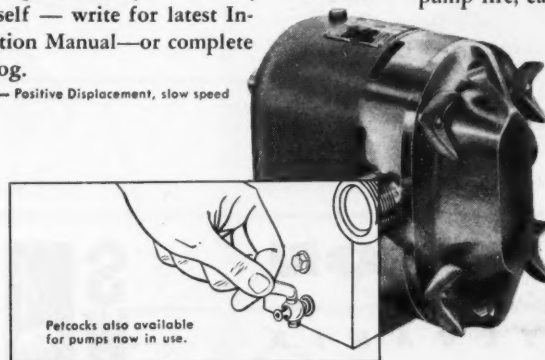
WAUKESHA P.D.* Sanitary Pumps are built for long life! Every detail in their design and construction confirms this. Service-conscious owners prove it every day, every year. That's why you'll find more Waukesha Pumps in use today for quality protection of all types of products, liquid, semi-liquid, creamy or chunky. Prove it yourself — write for latest Instruction Manual—or complete catalog.

*P.D. — Positive Displacement, slow speed

One of many Waukesha Pump "Life-Savers," this simple petcock can add *months* to pump service! Use it to drain condensate from your pump every time you clean it — daily.

It's important! If you leave condensate in your pump, you saponify the oil . . . Your oil loses its lubricating value, and you have rapid wear on the ball bearings, causing misalignment of shaft —resulting in excessive wear on impellers and pump body. Shorter pump life, early repair and need for replacement!

SAVE YOUR PUMP . . . Make the "Petcock-Check" *every day*. Let it drain until the oil runs clear. Then check the oil level; add oil to fill — of the recommended type and viscosity. It's good "life insurance." Saves money — and new pump investment.



Petcocks also available for pumps now in use.

WAUKESHA FOUNDRY COMPANY, Waukesha, Wis.



When inquiring check CP 3388 on handy form, pgs. 2-3

Try this for Size

REDUCTION

Whether it's tearing tin cans, or grinding to fine particle size — chances are, Sprout-Waldron can solve your size reduction problem. The wide variety of standard Sprout-Waldron machines perform almost innumerable operations. Their field of application extends over a great range of materials, particle sizes and densities. Grinding rubber, refining woodchips, defiberizing leather, granulating plastics, flocking rags, flaking grains are a few of the many applications.

Sprout-Waldron further increases the versatility of these standard machines in *two* ways. First, the standard unit can be *adaptioneered* or modified to meet specialized requirements. Second, the various machines can be combined in series, to perform the most complex "unit operations."

Sprout-Waldron size reduction equipment is being used today to perform many of the toughest jobs in plants in the processing and many other industries. And other Sprout-Waldron equipment is outstanding in such applications as mixing and blending, materials handling, classification, and pelleting. If you are processing materials that are hard and friable, soft and pliable, fibrous, solid or liquid, Sprout-Waldron offers you: 1. *Equipment covering a wide scope of processes and applications.* 2. *A broad background of experience in solving many types of processing problems.* 3. *Complete facilities for engineering, pilot testing and fabrication.* Write to Sprout-Waldron & Co., Inc., 10 Logan St., Muncy, Pennsylvania.

SPROUT-WALDRON

Manufacturing Engineers

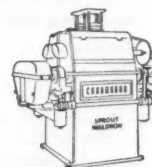
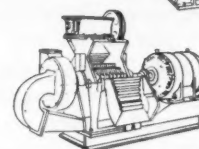
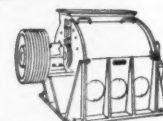
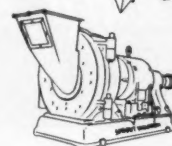
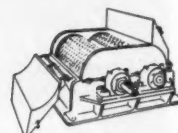
MUNCY • PENNSYLVANIA

MODERN EQUIPMENT FOR: Size Reduction • Mixing and Blending • Bulk Materials Handling • Product Classification • Pelleting & Cubing

SPROUT-WALDRON

EQUIPMENT & SYSTEMS for

- GRINDING
- CUTTING
- CRUSHING
- RUBBING
- TEARING
- FLAKING
- CURLING
- HULLING, ETC.



313-A

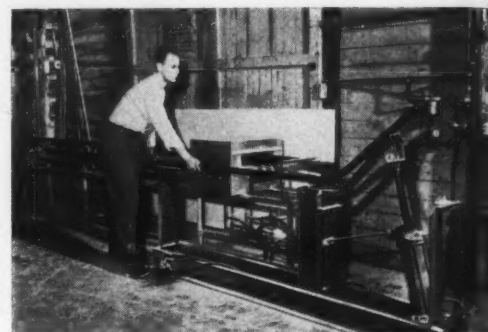
IDEAS

Adds pipe-bending machine for glass-coated pipe . . .

spot-heated lengths are bent to 45° without use of special methods of handling

Air-operated hydraulic machine shown below bends a length of steel pipe to 45° after it has been glass-coated inside and out. Prior to bending, pipe is spot-heated to 1500°F in small furnace shown in background. Pipe can be handled without special protection immediately after heating.

Company has also designed and installed a special pipe dipping machine, drying drum, and pipe fusing furnace. All are designed to handle appli-



cation of glass coatings to pipe up to 21' long and 3" diam. Most of the pipe produced so far has been for fluxing in the aluminum industry, and as heat exchanger tubes.

(Technique is used at Barrows Porcelain Enamel Company, Dept. CP, Cincinnati, Ohio.)

Reduction of noise and vibration in electric motors — three methods of treatment

Recently recommended have been three methods of treatment for reduction of noise and vibration in electric motors. Primary method is to reduce or eliminate the basic cause: 1) reduce all sounds from rotating parts; 2) reduce sound of magnetic reactions on motor frame coupled to air through vibrating surfaces; and 3) reduce unnecessary noises caused by ball bearings.

Respectively, practical examples for utilizing primary method are: 1) increasing clearance of fan, or using a fan with blades set at an awkward angle; 2) reduce coupling between vibrating parts of motor and atmosphere or structure supporting it; and 3) use of sound absorbent material or complete isolation of area of installation. Solutions, of course, are somewhat interchangeable with various problems.

(Summary of paper given before members of Technical Session of National Industrial Service Assn., May 1953, by Mr. Paul Richards of Electro Dynamic Division, General Dynamics Corporation, Department CP, Ave. A and North Street, Bayonne, New Jersey.)

When inquiring check CP 3389 on handy form, pgs. 2-3

IDEAS

Determine corrosion rate and total corrosion of buried steel . . .

electrical method doesn't require excavation

Studies at NBS show that rate of weight loss of a piece of steel corroding normally in soil can be measured electrically without actually weighing the metal. Furthermore, study shows that electrochemical theory of corrosion applies generally to soils.

Iron or steel buried in soil develops local differences in electrical potential at the surface of the metal. This results in formation of numerous small corrosion cells. Accompanying flow of electric current, hydrogen ion is discharged at cathodes and metal is lost at anode. According to Faraday's law, rate of weight loss from corrosion is proportional to the current. NBS method is based on established concept that current in a corrosion cell can be expressed as applied direct current which will just reduce cell current to zero. Corrosion (cell) current is equal to product of applied anode and cathode current divided by sum of applied anode and cathode current. Using indirect measuring technique, weighed steel specimens, differently aerated, were exposed to five corrosive soils for approximately two months. Soils ranged from very acid (pH 2.9) to very alkaline (pH 9.6). Tests were run at intervals throughout the exposure period. At the end of this time specimens were removed, cleaned and reweighed. Actual weight losses were compared with weight losses calculated. Calculated values of weight loss differed from actual values by approx 4%.

Two further points noted in the study were that this electrical method eliminated errors arising from 1) weight loss due to over cleaning and 2) removal of corrosion products which often inhibit further corrosion.

(Summarized from technical report 1734 dealing with electrical measurement of corrosion rate. Work was done at National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.)

For more information on product at right, specify CP 3390 . . . see information request blank between pages 2 - 3.

high vacuum

may be the solution to your tough chemical processing problem

Are you having difficulty removing every last trace of gas from the liquids you are processing? High vacuum may be the answer.

Are small amounts of water or other low boiling point volatiles interfering with your reactions? You should consider the use of high vacuum.

Would a *really dry* solid component (less than 1% residual moisture) give you a better, longer shelf-life product? High vacuum will give you this dryness, and at much lower processing temperatures.

CVC has engineers trained to apply the latest in high vacuum technology to the solution of these and other difficult production processing problems. A letter or a telephone call will put this high vacuum skill immediately at your disposal.

Consolidated Vacuum Corporation, Rochester 3, N. Y. (a subsidiary of Consolidated Engineering Corporation, Pasadena, California)

A CVC's model KJ-5000 Oil Ejector Pump removes gas at a rate of 600,000 micron-liters/second (7.5 lbs. of air/hour) and produces an ultimate pressure of 10 microns Hg.

B CVC's model KS-100 Oil Diffusion-Ejector Pump removes gas at a rate of 1250 micron-liters/second and produces an ultimate pressure of 0.01 micron Hg.

C CVC's model MB-200 Oil Diffusion Pump removes gas at a rate of 4000 micron-liters/second and produces an ultimate pressure of 0.4 micron Hg.

D CVC's model MB-10 Oil Diffusion Pump removes gas at a rate of 100 micron-liters/second and produces an ultimate pressure of 0.1 micron Hg.

CVC

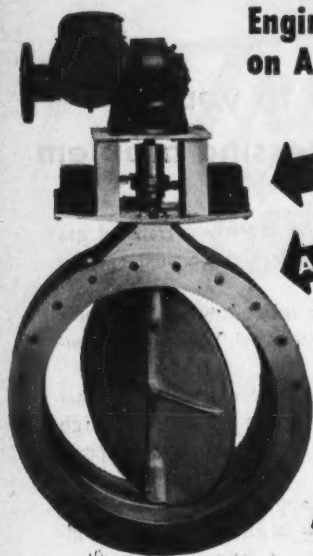
Consolidated Vacuum Corporation
Rochester 3, N. Y.

designers and manufacturers of high vacuum equipment
SALES OFFICES: MENLO PARK, CALIF. • CHICAGO, ILL. • CAMDEN, N. J. • NEW YORK, N. Y.

formerly
DPi
Vacuum Equipment Dept.

W. S. ROCKWELL VALVES

Engineered for Dependable Service
on Air, Gases, Liquids, Semi-Solids



FULL FLOW

with minimum pressure drop.

ANY CONDITIONS

of commercial, drip-
or bubble-tight closure,
with quick, positive control and
shut-off manually or automatically.

RESISTANT

Made ruggedly
for all conditions of
corrosion, erosion, temperatures
to 2000° F., pressures to 300 p.s.i.

ALL TYPES

Butterfly, wafer or slide
valves, 1" to 120" pipe size.



W. S. ROCKWELL COMPANY

BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES

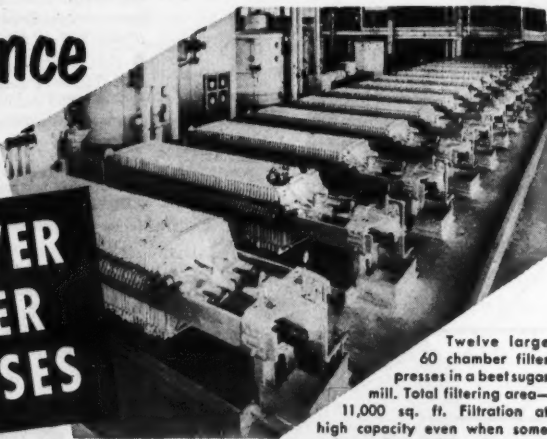
2203 ELIOT STREET • FAIRFIELD, CONN.

Sales Representatives in Principal Cities

When inquiring check CP 3391 on handy form, pgs. 2-3

Experience Proves

**SHRIVER
FILTER
PRESSES**



Twelve large
60 chamber filter
presses in a beet sugar
mill. Total filtering area—
11,000 sq. ft. Filtration at
high capacity even when some
units are being cleaned.

- Are lowest in cost per sq. ft. of filtering area
- Filter any material, even thick or viscous
- Recover solids, reasonably dry, firm, easy to handle
- Wash, extract, thicken, steam out, melt, redissolve
- Operate at any pressure or temperature
- Clarify, bleach, decolorize, deodorize, germproof
- May be made of any metal, wood, rubber, plastic

Can you ask for more? Get ALL the facts.
Get them straight. Get the new Shriver Catalog.



T. SHRIVER & CO., Inc. 846 Hamilton St. • Harrison, N. J.
Filter Presses • Filter Media • Diaphragm Pumps

When inquiring check CP 3392 on handy form, pgs. 2-3

IDEAS

**Laminated plastic rolls
resist acidic size on
nylon coater . . .**

aluminum rolls previously corroded, resulted in
costly staining of yarns

Increasing acidity of nylon sizing solutions has developed a new application for thermosetting laminated plastics. When strong sizes such as Orthocryl were first introduced, it was found that the acidity produced a corrosive action on aluminum emulsion rolls which resulted in discoloration of nylon yarn.

This laminated plastics manufacturer, who had been supplying piping and fittings capable of handling nylon size from storage tanks to the machines, took up the study of the roll problem.

While practically all laminated plastics possess very good moisture and chemical resistance, problem was finally solved with a special paper-base plastic that would machine to an extremely smooth surface.

Outer shells 3" long were fabricated from 3" OD tubing of the special plastic. This became the contact surface of the roller over which delicate nylon threads pass and which constantly revolves in a shallow bath of the strong sizing solution. The 3/4" ID hubs, press fitted and cemented with a non-corrosive adhesive were fabricated from a fabric-base plastic having high mechanical strength. Stainless steel screws lock the assembled roll to the steel shafts.

After many months of operation under severe conditions, the laminated plastic emulsion rolls have withstood the corrosive sizes and have prevented staining of the nylon yarn.

(Plastics manufacturer and fabricator herein described is Synthane Corporation, Dept. CP, Oaks, Pennsylvania.)

**Dynel dyeing costs are reduced
as much as 30 to 59 per cent
by improved formulations**

Investigations into the cost of dyeing Dynel have led to new formulations which have reduced the cost of dyeing the fabric as much as 59 per cent. New formulations are said to equal, if not better, their predecessors in color fastness and depth of shades achieved, according to cotton wash and fadometer tests. The improvements by reformulation were obtained primarily in acetate and acetate-acid color dyeings.

Following table shows savings for specific colors on the basis of 100 pounds of fabric. Calculated costs include dyes and assistants, but not scouring or finishing agents.

Color	Cost Savings
Green	59%
Maroon	56%
Navy Blue	48%
Light Blue	48%
Fur Brown	30%
Black	30%

Formerly the light blue was acid dyed, but savings resulted from use of mixture of acid and acetate dyes. Savings on fur brown shade were accrued by

CLEAN SEPARATION— between vapor and liquid



when
**YORKMESH
Demisters**

are installed in:

**VACUUM TOWERS
DISTILLATION EQUIPMENT
GAS ABSORBERS
SCRUBBERS
SEPARATORS
EVAPORATORS
KNOCK-OUT DRUMS, ETC.**

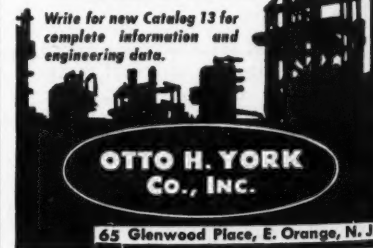
YORKMESH Demisters (entrainment separators—mist eliminators) have proved to be the answer to higher production and improved products when installed in new or existing equipment.

YORKMESH Demisters (made of finely woven wire) remove substantially all liquid entrainment even at increased vapor velocities. The net result: More production with higher quality.

How YORKMESH Demisters work:

1. Vapor disengaging from liquid creates fine liquid droplets.
2. The liquid droplets impinge and coalesce into large drops and fall off.
3. The vapor is now dry, entirely freed from entrained liquid.

Materials: Types 430, 304, 316 Stainless Steel, Monel, Carbon Steel, etc. Prompt shipment.



Write for new Catalog 13 for
complete information and
engineering data.

**OTTO H. YORK
Co., Inc.**

65 Glenwood Place, E. Orange, N. J.

When inquiring check CP 3393
on handy form, pgs. 2-3

CHEMICAL PROCESSING

including an acid blue instead of more expensive acetate blue. Investigators stipulated that when replacing certain expensive dyes and chemicals with others, dyers would be aware of the fact that the less expensive dyes may require closer control in dissolving. Specifically, the less expensive Capracyl Blue G dye used in brown shade formula must be properly dissolved and distributed evenly on fiber, since dye does not "migrate" as acetate colors do and may not level on the fiber as well.

Recommendations on dyeing procedures for Dynel stock, top and other forms are available from manufacturer. Typical dyeing and finishing procedure with bath ratio 30:1 is outlined below:

1. Prepare dyebath at 100°F and add Tergitol and Calgon (dyeing assistants).
2. Add dispersed dyes, raise temp to 212°F and run for 1½ hours. Cool slowly and rinse.
3. Scour at 160°F with Tergitol Dispersant NPX and Calgon. Rinse and dry.
4. Reluster under conditions established at dyehouse.
5. For maximum wash fastness scour again at 160°F with 2% soap, 1% soda ash for 20 minutes — dry at temperatures below 210°F.

(Information supplied by Textile Fibers Dept., Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y.)

More than 20,000 truck panels are formed with plastic die at Chrysler . . .

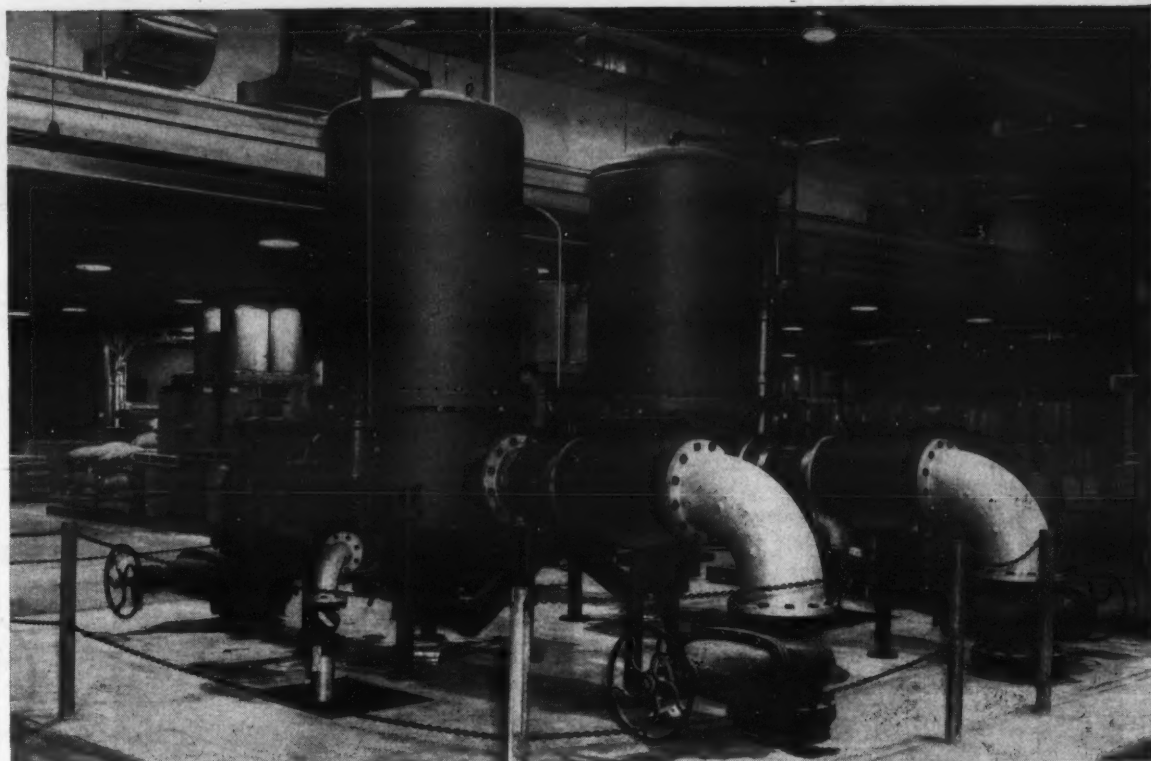
non-shrink casting resin allows quick construction of die, eliminates scratches on panels

In excess of 20,000 steel truck panels were recently formed with a combination plastic and metal die at the Chrysler Nine Mile Plant in Detroit. Although this procedure has been followed in making aircraft parts, it is an innovation in automobile manufacture. Due to the resiliency of the casting resin, the formed parts come off the die minus gall marks or scratches and can be painted with a minimum of surface preparation. One of the most important advantages of the plastic unit is the time saving in die construction. Three weeks after work was started on the die, the first acceptable stamping was produced. This is about one-half to one-third the time required for construction of an all-metal die.

Combination plastic and metal dies can also be built more economically than all-metal units. Weight is another factor, 1500 lb for the plastic die as compared to 6000 lb for a similar steel die. The non-shrink casting resin used in the die remains dimensionally stable in the process of making tools and will not crack from undue internal stresses.

Plastic is a thermosetting liquid phenolic material. It was developed for exceptional dimensional stability and ease of processing. It is mixed cold and readily poured without pressure into simple molds. Hardening is usually done by overnight heating at 160°F.

(Tool-Plastik used in die is manufactured by Rezolin, Inc., Dept. CP, 4825 W. Jefferson Blvd., Los Angeles 16, Calif.)



EVERY GRAIN OF SAND IS REMOVED from the well water passing through these abrasion-resistant FLO-KLEAN filters at the new Upjohn Company plant in Kalamazoo, Michigan.

Upjohn saves 2000 dollars a month

FLO-KLEAN filters protect valuable equipment at pharmaceutical plant

Maintenance records at the Upjohn Company's ultra-modern plant near Kalamazoo, Michigan, show that FLO-KLEAN filters are responsible for saving up to \$2000 a month in maintenance costs.

These Cuno FLO-KLEAN filters, used to remove sand and gravel from incoming well water, ordinarily take something like a teaspoon of sand out of each thousand gallons. That doesn't appear to be an impressive quantity, but it could cause serious damage to stainless steel valves, pumps, water softeners, condensers and other valuable equipment. Purity of process water is assured by the high-capacity FLO-KLEAN units.

Recently the wall of one of their thirteen 250 feet deep wells gave way, dumping large quantities of sand and gravel into the water system. Every bit of

this sudden deposit (almost seven cubic yards) was removed by the FLO-KLEAN filters. Without interrupting service, FLO-KLEAN continued its automatic operation and saved Upjohn a serious operating and maintenance loss.

In hundreds of applications throughout industry the fully automatic, continuously self-cleaning FLO-KLEAN filters have paid for themselves many times over by making river, lake, or well water fit for industrial use . . . and without loss of backwash water. Other uses include reclaiming industrial process water and coolants. If you need or use between 200 and 100,000 gallons per minute of clean water, find out how FLO-KLEAN can save you money. Write for free FLO-KLEAN bulletin to the Cuno Engineering Corporation, Dept. 101F, Meriden, Conn.

3.1



ENGINEERED FILTRATION

Removes More Sizes of Solids From More Kinds of Fluids

AUTO-KLEAN (disc-type)

MICRO-KLEAN (fibre cartridge)

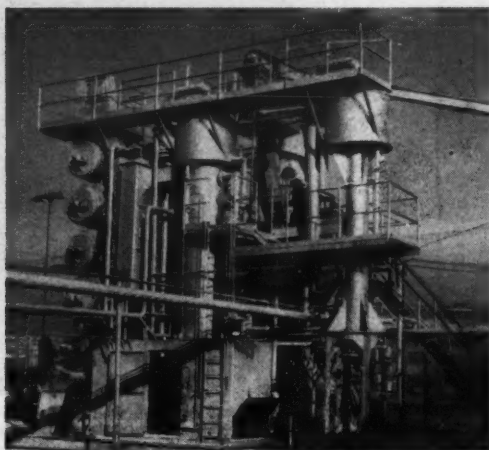
FLO-KLEAN (wire-wound)

When inquiring check CP 3394 on handy form, pgs. 2-3

Soybean and/or safflower oil extracted in versatile outdoor California plant . . .

that can be operated on straight solvent extraction or in combination with pre-exPELLERS

The Pacific Vegetable Oil Corporation's already versatile oil milling facilities in Richmond, Calif., were recently further expanded by addition of oil and meal producing facilities costing a quarter-million dollars. Heart of these new facilities is a flexible outdoor solvent extraction plant, shown in the photo. First of its type in Northern Cali-



Prefabricated outdoor solvent extraction plant at Pacific Vegetable Oil Corporation in California

fornia, the plant can be operated either as a straight solvent extraction plant or in combination with pre-exPELLERS.

After construction, the solvent extraction plant first operated as a self-contained unit on soybeans, while a battery of expellers were simultaneously pressing safflower. In March, however, the expellers and solvent extraction plant were run in combination with the pre-exPELLERS to produce a low-fiber, high-protein safflower meal for the dairy and beef cattle trade.

(New plant was supplied by The V. D. Anderson Company, Dept. CP, Cleveland, Ohio.)

Bonding plastics to steel provides new uses for laminates . . .

job accomplished with unusual adhesive

An advancement in the field of plastics surfacing has been made known with the announcement that laminated plastics are now being firmly bonded to steel as well as conventional wood backing. At present, method is being applied to the production of plastic-topped steel office furniture. This use of laminates was accomplished with an unusual adhesive.

The plastics used on the furniture are said to be durable and attractive. Glare and light reflectance are minimized by the plastics' satin finish, three



This Westinghouse high-voltage switchgear automatically and rapidly clears trouble at Standard Oil's Lima Refinery. If there's a momentary outage, the load is reapplied in segments.



Westinghouse control centers minimize maintenance problems and give Mississippi Chemical the advantages of grouped control. Individual units can be installed or removed with file-drawer efficiency.

Petroleum and chemical companies confirm:

Westinghouse equipment provides dependability

Our engineers help you get dependability by combining Westinghouse electrical equipment with creative system planning. Here's proof.

Sohio's Lima Refinery got power dependability without paying extra for stand-by capacity. Westinghouse engineers helped develop a power system which provides a fast restoration of service after interruptions. Westinghouse supplied a control system that automatically and rapidly clears trouble. This system successfully handled twelve power interruptions during the first nine months of operation, without loss of refinery production.

Mississippi Chemical officials called on Westinghouse to help them get a complete "packaged installation" with the best electrical equipment at no extra cost. One feature was that Westinghouse control centers were installed in nonhazardous locations throughout the plant. This gave Mississippi Chemical the advantages of centralized control without paying for more expensive explosion-proof equipment.

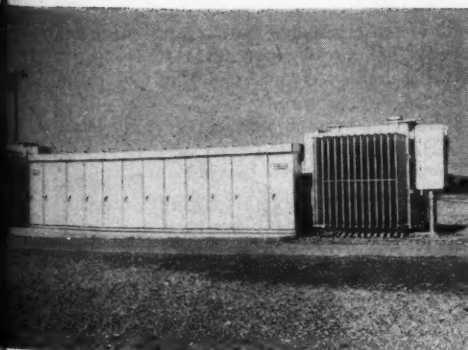
Texaco's Eagle Point Refinery got top-system dependability, efficiency and flexibility for future expansion. Westinghouse turbine-generators supply all the power, but there's also a tie-in with the local utility for emergency purposes. Dual-feeder cables carry power to all Westinghouse outdoor load centers. If one faults, the other can handle the full load. All Eagle Point has to do for any plant expansion is add substation capacity.

American Cyanamid and Westinghouse engineers worked out a power distribution system that prevents outages. If there's trouble on any feeder, power is switched to another. If a substation faults, other substations carry the load through cross connections. This system can be easily and inexpensively expanded as the plant grows.

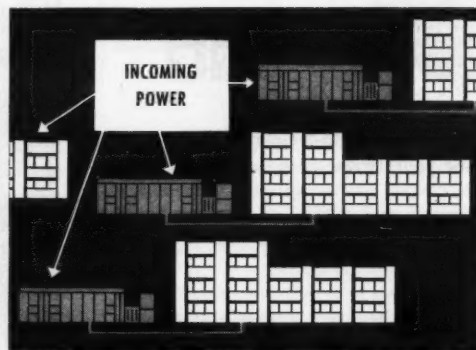
These solutions are only four examples of how Westinghouse equipment and services can meet your power distribution problems. If you'd like more information on the above, or other installations, call your Westinghouse representative. Or write to: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-94992

YOU CAN BE SURE...IF IT'S
Westinghouse



Eagle Point Refinery's Westinghouse substations are complete with switchgear, transformers and circuit breakers in one, compact arrangement. The system is highly flexible and dependable.



American Cyanamid spotted 10 substations throughout the processing area. When new buildings are added, additional substations will be installed without interfering with production.

When inquiring check CP 3395 on handy form, pgs. 2-3

dimensional pattern, and gray-green color. Desk and stand tops are said to resist burns from cigarettes and withstand heavy use without cracking. Spilled ink and pencil marks can be wiped clean with a damp cloth, and the smooth-textured finish provides an ideal writing surface.

(Line of office furniture is manufactured by General Fireproofing Co., Dept. CP, Youngstown, Ohio. Adhesive is a product of Armstrong Cork Co., Dept. CP, Lancaster, Pa. Textolite, plastic used for bonding to steel, is a product of Chemical Dept., General Electric Co., Dept. CP, 1 Plastics Ave., Pittsfield, Mass. . . . or for more information reader may simply check CP 3396 on convenient Reader Service slip between pages two and three.)

Cost savings in production of complex electronic circuits with foil-clad plastics

Substantial cost savings over hand wiring methods of producing complex circuits for electronic equipment, hearing aids, automatic signalling devices, etc., are said to be made possible through a number of foil-clad laminated plastics offered by manufacturer.

Possessing a bond strength of from 4 to 6 lb, copper- or aluminum-clad plastic is available in 36 x 36" sheets with foil thicknesses ranging from .00068 to .0094". According to specialized needs of circuit designer, etcher, or component manufacturer, foils may be bonded to one or both sides. Even in thin sheets, this paper-base laminate is said to combine excellent electrical properties with the good machinability so necessary for subsequent punching operations.

Accurate circuit reproduction on these foil-clad laminates may be achieved by any commercial printing process such as silk screen or photo etching. Unclad electrical grade laminate is used when patterns are to be reproduced by printing, plating, stamping, or plater process.

Foil surfaces are guaranteed to be free of wrinkles, pits, scratches, and pinholes. Uniform foil thickness assures fine line etching. Bonding adhesive is resistant to moisture and possess good electrical properties, matching the base laminate in NEMA characteristics. Laminates reportedly possess excellent bond strength and heat resistance. They meet the requirements of the hot solder test which requires a 1 x 1" specimen to be floated foil side down in molten solder at 400 to 450°F for ten seconds. At the end of this period there is said to be no blistering between laminate and foil.

Uniformity achieved by means of printed circuitry, its ruggedness and suitability for use as sub-assembly plug-in replacements are said to offer additional advantages in the maintenance of complex electronic equipment. Applications of pre-fabricated circuits are practically unlimited in the low power apparatus field, particularly in computers, remote indicators, switches, and other electronic devices.

(Information courtesy of foil-clad laminate manufacturer, Sythane Corp., Dept. CP, Oaks, Pa. . . . check CP 3397 on handy form, pages 2 and 3.)

The fittings that revolutionized pipe welding . . .

In the year 1931 Taylor Forge gave industry its first real line of seamless, butt-welding pipe fittings. We say it was the first *real* line because it was the first to include not only long and short radius ells, but also full branch and reducing tees, concentric and eccentric reducers, stub ends, caps and welding neck flanges.

This was a fully planned development. Many years before Taylor Forge had foreseen the future of the butt-welding fitting . . . had realized that pipe welding could not go beyond its then crude stage until pipe users were given *all* the fittings necessary to make up complete piping systems.

So Taylor Forge went to work on this and after long research and development came out with the full line that became the inspiration of modern pipe welding.

Naturally the organization that started ahead has kept ahead . . . in design, in quality, in breadth of line. That is why so many men who have followed the development of the WeldELL line, refuse to consider any other kind of welding fittings.



TF

For up-to-the-minute facts,
see your Taylor Forge distributor

TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS, General Offices and Works: P.O. Box 485, Chicago 90, Ill.
Offices in all principal cities. Plants at: Carnegie, Pa.; Fontana, Calif.; Hamilton, Ont., Canada

When inquiring check CP 3398 on handy form, pgs. 2-3

IDEAS

**Uniformly blended color pigments
are assured through use of
mammoth mixer . . .**

flusher unit handling 30,000 lb batches also
reduces time for standardizing product

Assurance of obtaining uniformly blended colors is provided by a huge 21-ton "flushing" machine recently put into operation. It is described as the world's largest unit for mixing pigments in the production of flushed (or wet) colors for industrial uses and can produce 30,000 lb of uniform color in a single operation.



Flusher unloads finished product into 50-gal drums

Flusher also effects a significant reduction in the time required to standardize batches. In addition, it is expected to increase production 15 to 20 per cent. It is capable of mixing 1500 gallons of flushed colors, corresponding to 15,000 to 30,000 lb, depending on specific gravity of color being blended. This is 3 times productive capacity of largest unit previously employed by company.

Function of flusher is to blend partially standardized colors that have already been vacuum dried. It is at the end of a feeder line of smaller flushers. Unit has a blending trough measuring 6'8" x 6'4" x 5'3". Catwalks have been built on each side of trough. A 75 hp motor weighing one ton activates the machine. Finished product can be unloaded into three or four 50-gallon drums simultaneously. Entire blending operation can be completed twice in 24 hours.

(Flusher is at The Hilton-Davis Chemical Co., Div. of Sterling Drug Inc., Dept CP, 2235 Langdon Farm Rd., Cincinnati 13, Ohio.)

Homogeneous reactor produces enough electricity for 50 five-room houses . . .

temperature and power high enough to run standard industrial turbine-generator

Production of useful amounts of electric power through nuclear energy has been achieved from the successful operation of a new type of reactor — the experimental homogeneous reactor — at Oak Ridge National Laboratory. Scientists brought a pilot-model of the reactor system up to its full design

(Continued on next page)



Four scientists are bathed in the light of one lone electric bulb which dispelled the darkness when electricity was first generated by the experimental homogeneous reactor. As steam produced from the heat of the "atomic furnace" poured into the turbine-generator (upper center), a switch was pulled to disconnect the reactor building from its normal supply of electrical power. After a few seconds of darkness, a switch was pulled which connected the building to the power from the reactor



Operating personnel are shown checking control and operating features of the homogeneous reactor. In foreground is the console at which the reactor operator sits, while on walls are recording instruments which report the phases of reactor operation

**for TOUGH
fluid and gas
handling jobs**

ATLANTIC
FLEXIBLE METAL HOSE

Conveying nitric acid for use in batch nitrations is quick death for ordinary flexible metal hose. Sulphuric acid and plating solutions are other notorious killers. When temperature and pressure extremes and adverse handling conditions are also involved, hose replacement is frequent and expensive.

That's why—for tough jobs—it's good economy to specify Atlantic flexible metal process hose. Manufactured to survive the most destructive use, it is unequalled for leak-proof qualities, flexibility, durability, strength and lightness. It performs long after ordinary hose is scrapped and returns real savings in your material and labor dollar.

Whatever your application — conveying, controlling movement and vibration, correcting misalignments, compensating for expansion and contraction — there is an Atlantic flexible metal hose that is best for it.

Available in Seamless or Interlocking construction: Steel, stainless steel, monel, bronze. 1/4"–36" I.D. inclusive with appropriate fittings.

Our engineers have developed flexible metal hose for a number of classified nuclear applications. Though these types cannot be released at present, the experience gained is available for any unusual problems you may have.

Write for Chemical and Process Industries Bulletin 20D.

See our Catalogs

in Sweet's Files for
Product Designers
and Mechanical Industries.

ATLANTIC

ATLANTIC METAL HOSE CO., INC.
106 West 64th St., New York 23, N. Y.

When inquiring check CP 3399 on handy form, pgs. 2-3

(Continued from preceding page)

power of 1000 kw of heat output. The reactor steam was then switched to a turbine-generator and about 150 kw of electricity was produced. This is enough electricity to meet the estimated needs of 50 average five-room dwellings.

Homogeneous reactor at Oak Ridge, capable of producing both fissionable material and electric power, is the first to operate at a temperature and power high enough for production of steam to run a standard industrial turbine-generator. However, this reactor was not designed to produce economical electric power. For the first short run period of top power-level operation, the reactor produced twice as much electricity as needed by its own building, and the excess electricity was fed into the Oak Ridge electrical system.

In the reactor, a single homogeneous solution serves as fuel, moderator and coolant — hence the name homogeneous reactor. The reactor went critical on April 15, 1952. Following the low-power operation, the experimental work will continue at higher power to acquire information regarding the feasibility of this type for full-scale reactors.

Reactor is housed in a sheet-metal, barn-type building situated in a small valley adjacent to Oak Ridge National Laboratory. Construction and fabrication of the reactor and its auxiliaries, including building and site, cost about \$1,100,000; research and development costs approximated \$3,000,000.

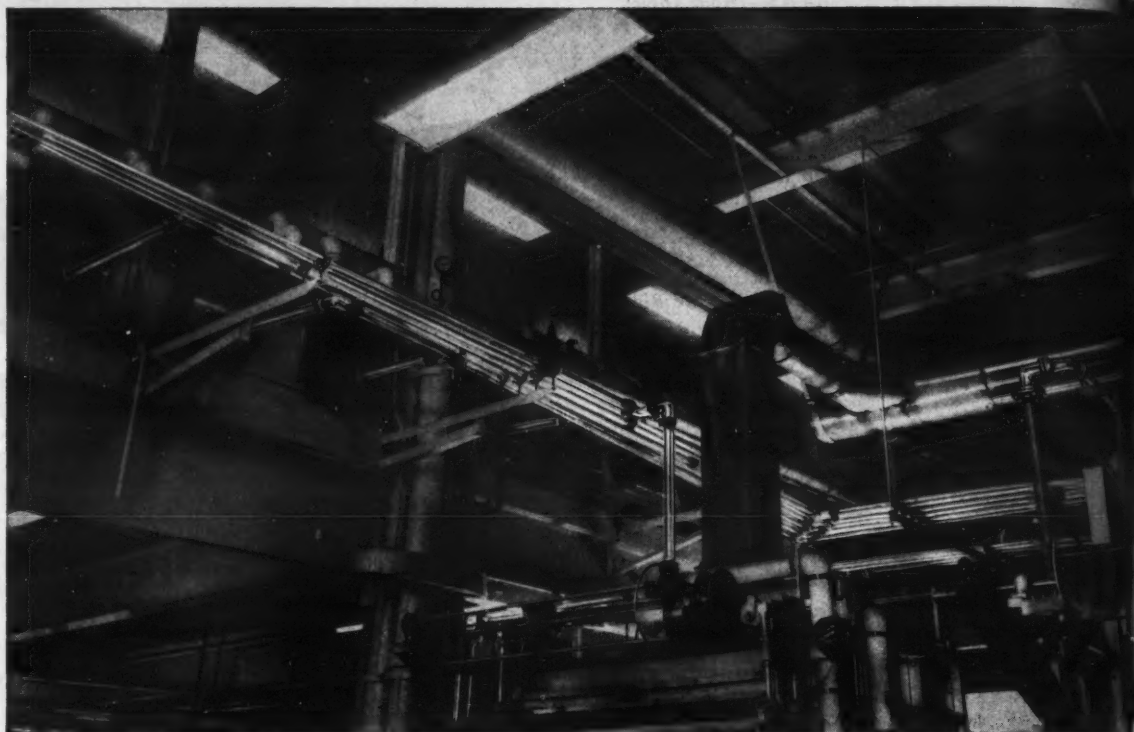
(Information courtesy of Oak Ridge National Laboratory, Oak Ridge, Tenn. which is operated by Union Carbide and Carbon Corp. for U.S. Atomic Energy Commission)

Place "half-pint" atomic pile into operation at AEC site . . .

new low-power nuclear reactor is in cube of graphite measuring five feet on a side

A pint-sized atomic pile, "little brother" to the ones used to make plutonium for atomic bombs, has been placed in operation as a research tool at the Knolls Atomic Power Laboratory at Schenectady, N. Y. New device, called a thermal test reactor, consists of a cube about five feet on a side made of blocks of graphite. The atomic fuel in an 18-inch aluminum tank is inside a cylindrical hole in the center of the graphite.

A unique feature of the reactor is an internal "thermal column," where the neutron flux is much greater than in the fuel region surrounding it. Fundamental properties of the various kinds of atoms which are placed in this column can be quickly and easily determined. This facility can be used to detect minute amounts of many elements — quantities considerably below the capabilities of ordinary methods of analytical chemistry. At comparably low reactor levels, it can also make small quantities of radioactive forms of elements that are ordinarily non-radioactive. These radioactive isotopes, as is widely known, are finding use in biological and other scientific research.



How this chemical dye user

protects sensitive products in process

...and gets 2 other advantages with Pyrex® brand Glass Pipe

When Bachman Uxbridge Worsted Mills prepared to select a piping material, they set up three requirements:

1. It must be noncontaminating in transferring highly sensitive dyes from a central mixing station to dye kettles. Dye shadings are extremely sensitive to metallic contamination.
2. It must be easy to clean. And the cleaning had to be positive and provable so that colors could be switched rapidly.
3. It must assure real economy in cost of installation, maintenance and service life.

PYREX brand "Double-Tough" glass pipe met these requirements so well that this Uxbridge, Mass.

textile mill has 25 lines in various lengths from 25 to 100 feet.

The exceptional chemical stability and corrosion resistance of PYREX pipe makes it ideal for the most sensitive dyes and pharmaceuticals as well as hot, concentrated acids (except hydrofluoric) and mild caustics.

Easy cleaning is assured by its hard, smooth surface, free of pits and truncations. When it is clean, the transparency of glass lets you see that it is clean . . . also enables you to detect air locks and impediments in the lines.

PYREX brand glass pipe is actually the most economical corrosion-resistant piping material on the market today. First cost is reasonable. Your own men can install it. And it is sure to provide long, troublefree service . . . not only because it cannot be eaten away by acids, but because it has a high degree of physical and thermal strength.

The name of your conveniently located, qualified PYREX pipe distributor is listed at right. Contact him today for the facts on this efficient, money-saving material . . . or mail the coupon.

CORNING GLASS WORKS

CHEMICAL PROCESSING

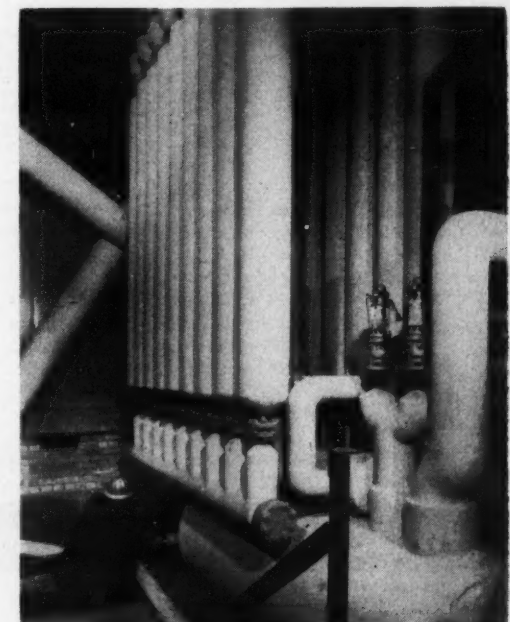
The atomic fuel is in two-inch disks of an uranium-aluminum alloy strung on rods like beads on a string and kept apart by plastic separators. Each rod, about 18 inches long, is hung in a can containing a light paraffin base oil. There are 20 such cans in a circle, with water between them.

In the middle of the ring of fuel cans is a graphite cylinder 12 inches in diameter with a test hole in the center. Materials to be tested or exposed to neutrons are placed in this hole.

Control of the pile is accomplished with rods and sheets of cadmium which can be lowered into the fuel assembly. These absorb neutrons and so prevent them from carrying on the chain reactions. Other safety rods are provided which drop automatically into place when needed.

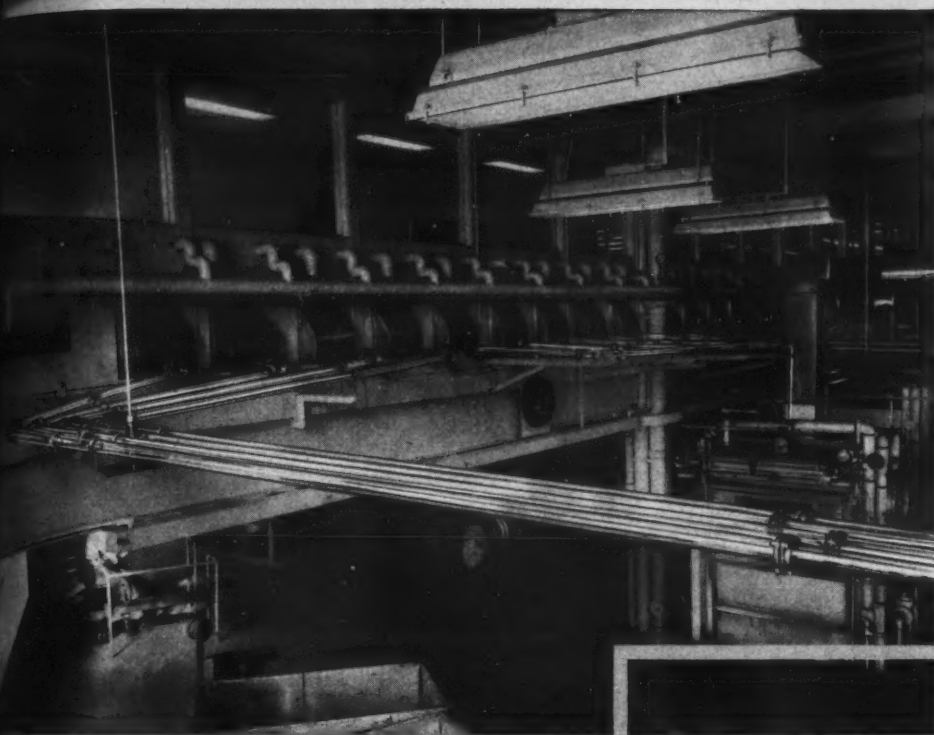
At Knolls the pile is inside a cell 10 x 15 feet, surrounded by a six-foot concrete wall. Access to the cell can be attained through an opening three-feet wide which has a motor-operated door. This door must be closed and locked before the reactor can be operated.

(Information courtesy of Knolls Atomic Power Laboratory which is operated by the General Electric Co., Schenectady 5, N. Y. for the Atomic Energy Commission.)



STEAM GENERATOR FOR BREEDER REACTOR — Shown is the steam generator developed at Argonne National Laboratory for use with the Laboratory's Experimental Breeder Reactor at the National Reactor Test Station in Idaho. The new generator differs greatly in appearance and in some respects in construction from conventional steam-producing systems. In addition to assuring high steam generating efficiency, it contains unique design features which prevent

(Continued on next page)



High chemical stability and easy cleaning are two of the big reasons why 25 lines of PYREX pipe, 25 to 100 ft. in length, are transferring sensitive dyes from central mixing station to dye kettles at Bachman Uxbridge Worsted Mills, Uxbridge, Mass.

Transparency permits observation of flow in lines. Low first cost, easy installation and long service life assure real economy.

The installation described here is typical of hundreds in many different industries. For ideas on how PYREX pipe is serving these industries, send for "PYREX brand Glass Pipe in the Process Industries."

These PYREX brand glass pipe distributors stock the complete line:

BELMONT, CALIFORNIA
Glass Engineering Laboratories

FRESNO 17, CALIFORNIA
Valley Fdy. & Mach. Works

NEW HAVEN, CONNECTICUT
Macalaster Bicknell Company

ATLANTA, GEORGIA
Southern Scientific Company

CHICAGO 44, ILLINOIS
Fred S. Hickey, Inc.

NEW ORLEANS, LOUISIANA
W. H. Curtin & Company

CAMBRIDGE 39, MASS.
Macalaster Bicknell Company

ST. LOUIS 2, MISSOURI
Stemmerich Supply Inc.

LODI, NEW JERSEY
Mooney Brothers Corporation

ALBANY 5, NEW YORK
A. J. Eckert Industrial Sales Corporation

BUFFALO 13, NEW YORK
Buffalo Apparatus Corp.

ROCHESTER 3, NEW YORK
Will Corporation

HATBORO, PA.
Sentinel Glass Company

PITTSBURGH 19, PA.
Fisher Scientific Company

HOUSTON 7, TEXAS
W. H. Curtin & Company

SEATTLE 4, WASHINGTON
Scientific Supplies

TORONTO, ONTARIO, CAN.
Fisher Scientific Company, Ltd.

MONTREAL 3, QUEBEC, CAN.
Fisher Scientific Company, Ltd.

VANCOUVER, B. C., CAN.
Scientific Supplies, Ltd.



CORNING, N. Y. *Corning means research in Glass*

When inquiring check CP 3400 on handy form, pgs. 2-3

If you've never used this—

maybe you should It's UNIFLEX...

The new Helically-corrugated Seamless Flexible Tube

If you have a process or application involving flexible metal hose, it will pay you to know a few facts about UNIFLEX. For this entirely new, *seamless* flexible tubing is just coming into its own—in applications too critical for ordinary concentric tubing.

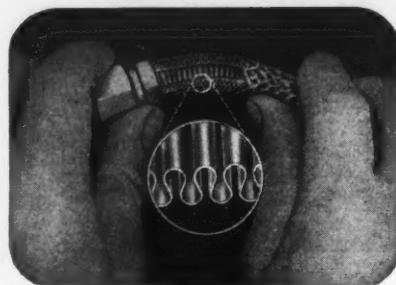
Consider...

1. We make UNIFLEX from seamless, special bronze alloy tube—tough, corrosion-resistant, leak-proof.
2. Helical corrugations give UNIFLEX greater flexibility and longer life. Our unique method of manufacture eliminates embrittlement resulting from excessive work-hardening.
3. For leakless service, UNIFLEX fittings have metal-to-metal seat. Seal is produced through spring washer effect of hose on fitting body.
4. Unlike conventional split-ring collars used on concentric tubing, the one-piece UNIFLEX collar hugs 4 or 5 convolutions. This means far less wear—and much greater strength in the connection.
5. UNIFLEX is encased in high-tensile bronze wire braid attached to specially designed couplings. Hose is relieved of damaging strains; sheath prevents elongation, gives extra safety, withstands abrasion.
6. UNIFLEX helical construction distributes flexing between inner and outer surfaces of convolutions—eliminates strain usually limited to one groove. Result: Greater safety and longer life.
7. UNIFLEX fittings are shorter and more compact than most others. This permits the use of more hose length and less fitting length—gives far greater maneuverability, makes it easier to get in and out of tight places.

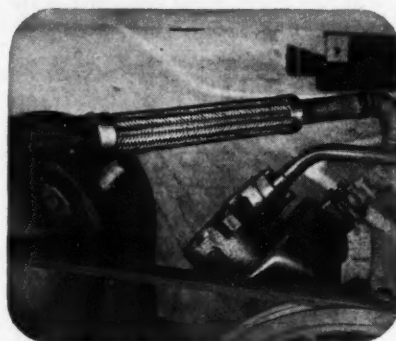
UNIFLEX is supplied in measured lengths, properly fitted and ready for use. You can buy it in sizes from $\frac{1}{4}$ " to 6" ID. It has already proved itself in such applications as hydraulic lines, oil burners, refrigeration machinery, air conditioning equipment, pumps, compressors, diesel engines and machine tools. Our Designers and Engineers have a thorough knowledge of its behavior under exacting conditions. If you'd like to know what UNIFLEX can do for you write us about your problem. We'll be glad to help you—without obligation.



Send for your free copy of our new UNIFLEX Catalog. It contains full technical data, sizes, fittings, suggestions for use, and information about new UNIFLEX Quick-soldered Couplings.



Note the Helically-corrugated, seamless wall structure of UNIFLEX.



UNIFLEX vibration eliminator used between circulating coils and compressor of a General Electric air conditioning unit. Motor-compressor unit is spring-mounted, requires a flexible connection.

IDEAS—Atom Topics

(Continued from preceding page)

mixing of the reactor's alkali metal coolant and water or steam which, of course, react violently.

Steam, from this generator, is conducted to a super-heater from which it emerges at a temperature of 550°F and at 400 psi. It is then fed to a turbo-generator where it is used to produce the 170 kw of electricity which ordinarily are required to meet all of the power demands of the reactor and the building in which it is housed

Make "one-shot" inspection of hydrogen blisters in refinery reactor...

measuring 20' high and 5½' in diameter, tank was exposed for 8 hr to iridium-192

Largest single industrial collection of radioactive isotopes in the United States — 76,000 millicuries of iridium-192 — was used recently in an inspection of a reactor at the Eastern States Petroleum Co. refinery in Houston, Tex. The inspection marked the first time that isotopes were used to look for hydrogen blisters in steel of a refinery reactor unit.

Reactor under inspection was 20 feet high and 5½ feet in diameter. Walls consisted of 2-¾ inches of



Film holder placed on the outside of the reactor catalogued and ready for exposure

steel, 5 inches of concrete and a 1/8-inch thick chrome steel liner. The job was accomplished in a single shot and took 8 hours.

First step in the procedure was to tape film sheets all around the steel tank. Each film was carefully oriented and catalogued as to its exact position on

Let Our Family of Products Help Yours

✓ Check products you are interested in.



☐ SEAMED AND SEAMLESS METAL HOSE



☐ PRECISION BELLWS



☐ IGNITION HARNESS



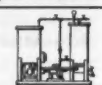
☐ IGNITION SHIELDING



☐ ELECTRICAL CONNECTORS



☐ RIGID AND FLEXIBLE WAVE GUIDES



☐ FILTERS



☐ FUSES

Titeflex

TITEFLEX, INC.
509 Frelinghuysen Ave.
Newark 5, N.J.

Please send me without cost information about the products checked at the left.

NAME _____
TITLE _____
FIRM _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

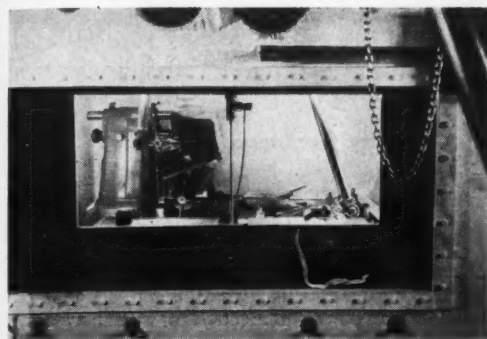


When inquiring check CP 3401 on handy form, pgs. 2-3

the tank. Then the iridium-192 charge was loaded into a special camera and lowered on a steel cable into the reactor. After exposure, the films were removed and developed. Each film was then interpreted for the presence or absence of blisters on the tank.

(Performing the inspection was Isotope Products Inc., Dept. CP, 2703 Drexel Blvd., Houston, Tex. . . . or reader may secure more information by simply checking CP 3402 on handy Reader Service slip between pages two and three.)

Cerium prevents browning of 3' thick glass window in AEC "hot cave"

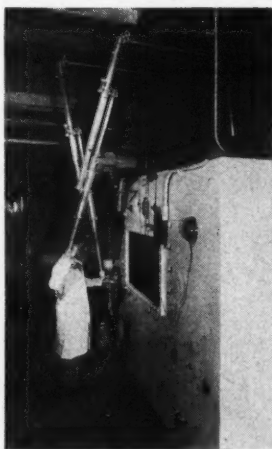


Looking into "hot cave" through 3' thick cerium-stabilized glass window. Cerium prevents browning of the glass by radiation

A cerium-stabilized glass is playing an important role in atomic research at the Argonne National Laboratory. It permits scientists to look inside heavily shielded "hot caves" while they are operating a master-slave manipulator.

Since even the very best plate glass quickly becomes opaque under the bombardment of radioactive atoms, it became necessary to develop a new type for this installation. Highly refined cerium proves effective as a stabilizer and permitted production of these non-browning windows.

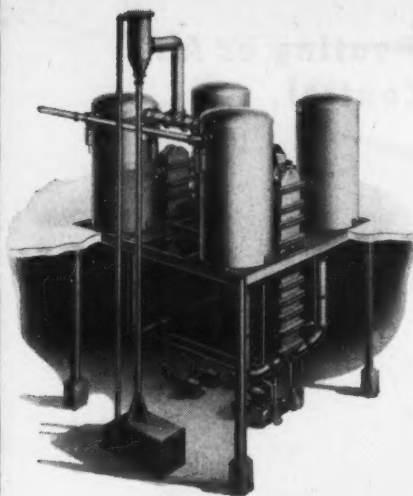
(Cerium is one of the rare earth chemicals produced by the Lindsay Chemical Company, Dept. CP, West Chicago, Illinois.



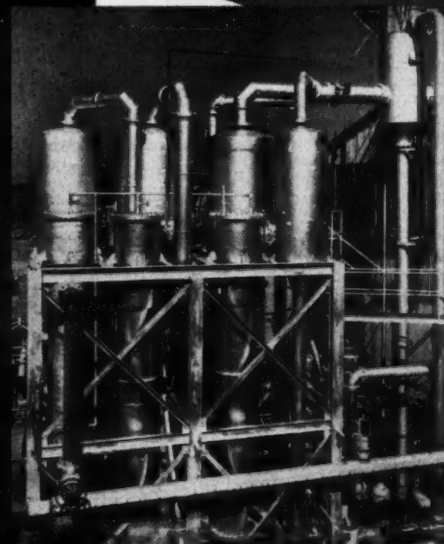
Scientist working manipulators while watching his operations through 3' thick glass window

dependable
process
equipment
built to
fit your
needs

CONKEY EVAPORATORS FOR CHEMICAL PLANTS



Conkey Flat Plate Evaporator with Rosenblad Switching System permits continuous operation at full capacity. A periodic condensate wash of all parts removes chemical scale.



Conkey Long Tube Film Type Evaporator concentrates foaming liquids and heat-sensitive materials. Operates efficiently at extremely low temperature differentials.



Process Equipment Division

Send for
latest bulletin on Evaporators

GENERAL AMERICAN TRANSPORTATION CORPORATION

Sales Office: 10 East 49th Street, New York 17, New York
General Offices: 135 South La Salle Street, Chicago 90, Illinois
In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario
OFFICES IN ALL PRINCIPAL CITIES

Other General American Equipment: Turbo-Mixers • Filters • Dewaterers
Towers • Tanks • Bins • Dryers • Pressure Vessels

When inquiring check CP 3403 on handy form, pgs. 2-3

What's YOUR Heating or Air Conditioning Control Problem?



...with their 60 years of experience installing pneumatic systems of temperature and humidity control in all types of important buildings are well qualified to help you obtain the greatest return from an investment in — **ACCURATE UNIFORM CONTROL**

in all types of heated or air conditioned spaces—offices, factories, process rooms, processes, research and test laboratories, packaging or storage rooms. You can gain ...



Some Prominent Users of Powers Control:

Ford Motor Co.
Chrysler Corp.
Esso Research Center
Sears Roebuck & Co.
Bendix Aviation Corp.
Goodrich Tire & Rubber Co.
Eastman Kodak Co.
Pepperell Mfg. Co.
Armour & Co. • Swift & Co.
Bochmann Uxbridge Corp.
Monsanto Chemical Co.
U. S. Capitol Bldg.
M.I.T. and Harvard Univ.
N. Y. Stock Exchange

Increased Efficiency and Output of Workers by keeping each room or department at its proper temperature.

Cuts Heating Costs up to 25%—23% fuel savings reported by E. R. Squibb & Sons. With today's higher fuel costs bigger savings than ever before are possible with Powers control. It eliminates fuel wasted by OVER-heating with manual operation.

Precision Control for Processes—Wherever product uniformity and quality are dependent upon precise temperature and humidity regulation use Powers controlling, indicating or recording instruments.

Phone or Write Powers Nearest Office for aid in selecting the type of automatic control that will give best results for your requirements. There's no obligation. Powers control systems can be installed in existing as well as new buildings.



THE POWERS REGULATOR CO.

Skokie, Ill. • Offices in Over 50 Cities, see your phone book.

OVER 60 YEARS OF TEMPERATURE AND HUMIDITY CONTROL

When inquiring check CP 3404 on handy form, pgs. 2-3

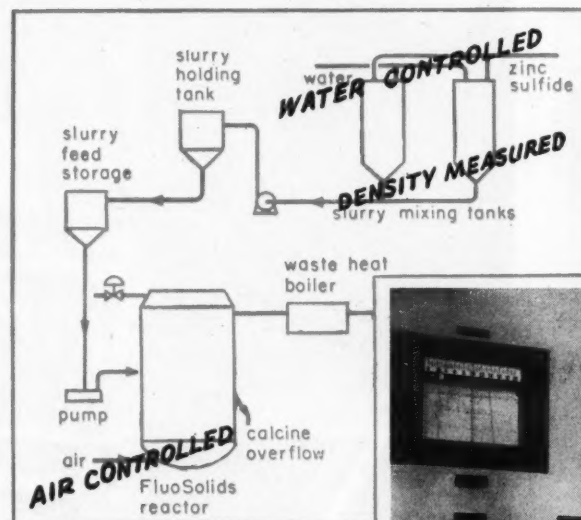
instrumentation & control

Splitting ZnS for two products calls for CLOSE SLURRY CONTROL

Reactor turning concentrated sulfide to the oxide and SO₂ for both products is closely supervised by instruments

ONE of the processes at Aluminum Company of Canada's new Arvida plant is a contact sulfuric plant using zinc sulfide as the starting material. Zinc oxide, naturally, is a valuable by-product — and in order to get it, Alcan engineers have built their roasting process around a Dorr Fluo-Solids unit.

In order to maintain the proper balance of air-to-sulfide in the continuous roasting unit, they have 1) arranged for zinc sulfide to be fed as a slurry of controlled density and, 2) set up an air-to-slurry proportioning system.



Schematic shows first steps of process and points of measurement and control

Panelboard of the Alcan plant at Arvida

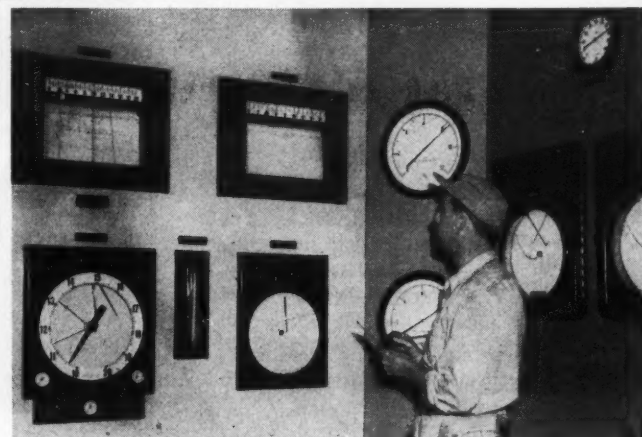
Slurry Consistency Control

First, zinc sulfide (a concentrate) passes through a pug mixer and on to one of two slurry mixing tanks. Water is added in the tanks. In order to prevent load changes at the next stage (Fluo-Solid unit), two bubble tubes are immersed in the slurry. Since the opening of one tube is a fixed distance above the opening of the other, differential pressure between the tubes is a measure of slurry density.

Differential air pressure is transmitted to a differential converter, and signal is passed on to an indicator and a controller. Auto-manual transfer switch is provided for manual operation. Control is maintained through a dilution water valve. And this entire system is arranged so that it can be applied to either of the tanks.

Proportioning Air to Slurry

Slurry is moved from mixing to a holding tank and from there to a feed tank. Final



feeding of slurry from the feed tank to the reactor is done with a Moyno pump (positive displacement) with a variable speed drive. This is the "set" stream — though slurry rate is adjustable from the panelboard.

Reactor itself is 22 feet in diameter and has a daily capacity of 140 tons of zinc concentrate. Sulfur dioxide is removed at 10 to 12% concentration. Sulfur dioxide yield is dependent on proper air/slurry ratio, however, and must be held constant because it supplies the contact acid process.

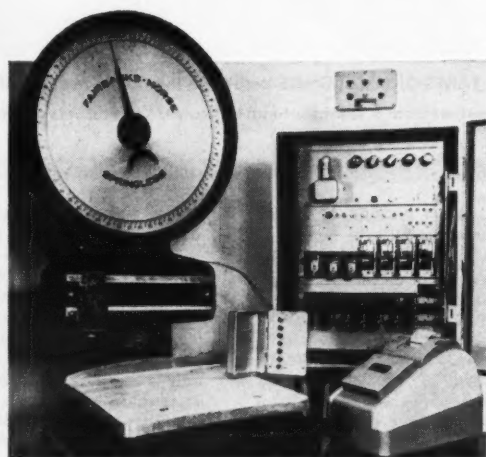
Pumps are usually run at a set rate, and air feed is controlled automatically in a pre-set ratio to pump speed. Air rate can be adjusted remotely by operator. A recorder showing SO_2 in the exit gas guides operator in these settings.

(Instrument system described here was designed by Industrial Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . . or for more information check CP 3405 on handy form, pages 2 and 3.)

Adding machine added to scale speeds operations, loading, invoicing in plant . . .

automatic system is capable of adding, multiplying, extending weight figures, etc

Electronic conversion unit records net weight readings directly from any dial scale and enters information into business machines or IBM units.



Scale at left is connected to adding machine through electronic totalizing unit at right rear

Conversion unit also can control conveyor, mono-rail, or hopper delivery across scales. It records weight readings as fast as one unit per second.

Weights are itemized, subtotaled, and totaled as desired. They can be printed automatically on tape or in business form. Information can also be stored, subtracted, multiplied, or extended in

(Continued on next page)

Accurate Measurement of HIGH DIFFERENTIAL PRESSURES

... at high statics!

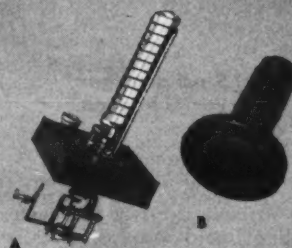
Differential pressure measurements at ranges far above the limits of conventional devices, and at statics up to 2200 psig, can be readily recorded and controlled by the new Foxboro Type EH Instrument.

Major chemical companies have employed this instrument to measure pressure loss across fixed catalyst beds. By operating until a pre-determined pressure loss indicates catalyst exhaustion, instead of shutting down and regenerating on a time cycle, they have increased production, cut costs.

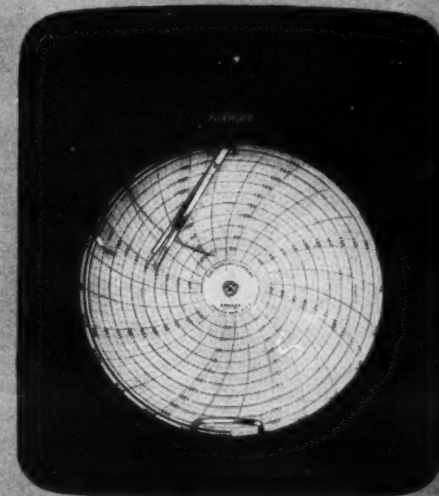
Many large steam generating plants have installed Type EH Instruments to control differential pressure across boiler feed valves, thus assuring at all times that the boiler feed pump is operating at pressures high enough above boiler pressure to assure safe operation.

Differential pressure ranges are available from 0-100 psig minimum to 0-2200 psig maximum. Design of the helical actuating element assures precision over the entire measuring span. Heavy-duty construction of the element and its housing makes operation safe.

Write for details on Foxboro Type EH Instruments for indicating, recording, controlling, transmitting.



Heart of the Foxboro Type EH Differential Pressure Controller (below) is the heavy-duty stainless steel helical measuring element (A) with its alloy-steel housing (B). This assembly is mounted at rear of instrument case, the motion of the helical being transmitted to the instrument mechanism through a friction-free pressure seal bearing.



THE FOXBORO COMPANY, 819 NEPONSET AVE., FOXBORO, MASS., U.S.A.

FOXBORO

REG. U.S. PAT. OFF.

PRESSURE INSTRUMENTS

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

When inquiring check CP 3406 on handy form, pgs. 2-3

(Continued from preceding page)

any manner. Entire invoice, for example, may be filled out automatically as orders are weighed. Any number of scales, business machines, or IBM units can be simultaneously fed through one conversion unit. Thus conversion unit can be used in controlling batching operations as well as preparing freight invoices, or recording net weights.

(Electronic Totalizing Scale EPS-7 has been developed by Industrial Electronic Engineers, Dept. CP, 3973 Lankershim Blvd., North Hollywood, Calif. . . . or for more information check CP 3407 on handy form, pages 2 and 3.)

Furnishes 3-15 psi air signal directly from variable area flowmeter . . .

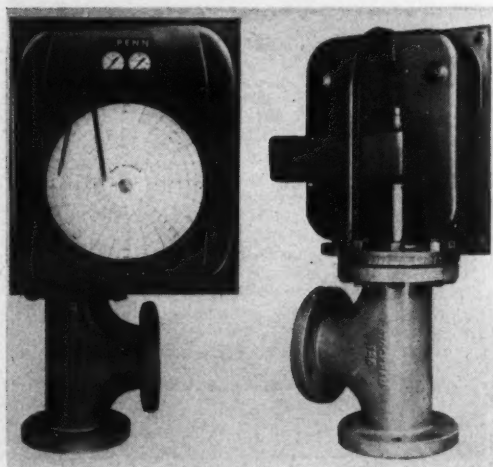
liquid ranges extend from 0.3-3 to 120-1200 gpm; gas, vapor, and steam units are made, too

Uses: Variable area type flow meter is designed for handling liquids, vapors, gases, steam.

Features: Pneumatic transmission in standard output range of 3-15 psi air is used. Other outputs are available.

Description: Variable area meter with pneumatic transmission is an all metal instrument operating on rotameter principle. Instrument is mounted directly in the pipe line as a valve would be. Both tees and ells can be used for mounting.

Liquid rates extend from a low scale running 0.3 to 3 gpm to a high range which extends from 120 to 1200 gpm. Corresponding gas or steam flows



Recorder mounted on transmitter is shown

depend on pressure and temperature conditions. Instrument is produced in sizes from 2 to 8 inches with a wide choice of materials for meter bodies and internal metering components.

Metering float rides vertically in tapered metal throat inside meter body. Connection between meter-

WHAT'S NEW AT BRISTOL . . .

Meet the WORLD'S SIMPLEST

It's Bristol's new METAGRAPHIC Pneumatic

for measuring, indicating, recording and controlling pressure, temperature, vacuum, flow, differential pressure, and liquid level

Here are a few of the advantages of Bristol's METAGRAPHIC system:

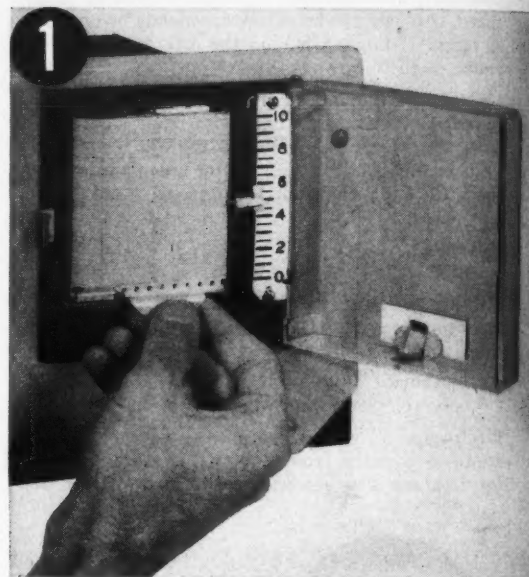
SIMPLICITY . . . fewer moving parts, fewer adjustments needed, and less service required. Range changes can be made in seconds.

FLEXIBILITY . . . all components are interchangeable. Units can be combined like building blocks to make up any kind of arrangement; functions can be located exactly where they're needed.

TRUE PLUG-IN SERVICE . . . provides great savings in installation costs. And if trouble is suspected with any component, just pull the doubtful unit out and plug in a stand-by—without stopping any processing. The suspected unit can be taken to the shop and checked whenever time permits. You don't lose any air pressure when changing units, either. Bristol's automatic sealing system prevents loss of signal to other components.

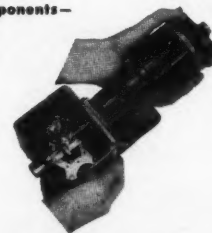
NO TIME LAGS . . . in a four-pipe circuit the transmitter signal and the controller-output signal travel around a very short loop—which can be as little as three feet long.

These are some of the important advantages of Bristol's METAGRAPHIC instrument system—the product of over 60 years of experience in instrument making and application in practically every industry. Get the whole story by writing to The Bristol Company, 141 Bristol Road, Waterbury 20, Conn.



IT TAKES ONLY SECONDS to change the Bristol METAGRAPHIC receiver from a recorder to an indicator: Case door is opened . . .

Here are the basic components—

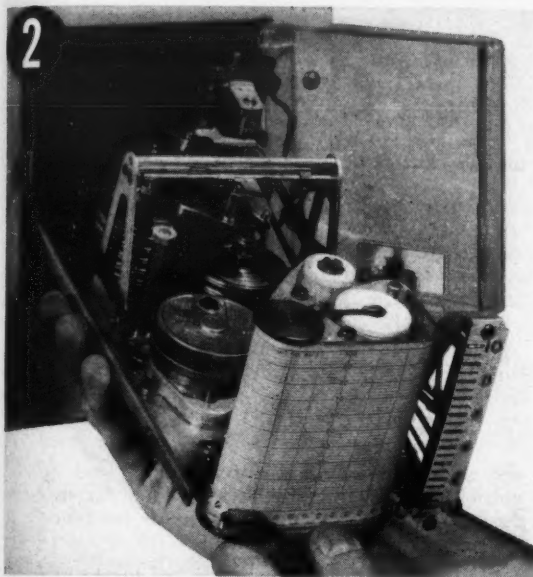


BRISTOL PNEUMATIC TRANSMITTER, with cover removed to show simplicity of the world-famous Bristol measuring element. The frictionless transmitter, with only one pivot and no flexures, will operate in any position, indoors or out. The unit is sensitive to extremely small changes in the measured quantity, as minute as 0.03% of range, including reversal.

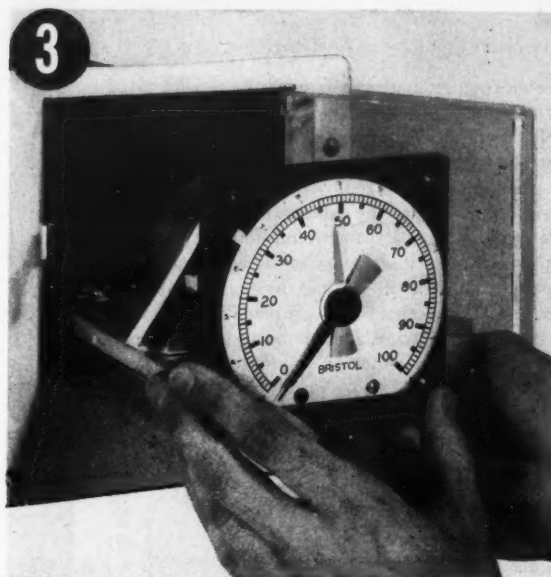
AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

ST INSTRUMENT SYSTEM!

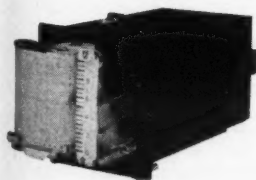
Transmission instrument system...



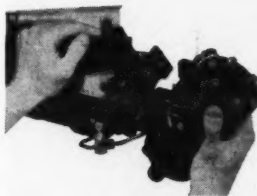
Recorder chassis withdrawn from case (air pressure is automatically maintained)...



Indicator chassis is plugged into same case. Control remains undisturbed throughout change-over.



HERE'S THE RECORDER CHASSIS, in retracted position. Now pen can be inked, set point and zero adjustment made without disturbing record or control. You can bring up to three related variables, such as flow, pressure and temperature, into one receiver. Auto-manual switching is foolproof and "bumpless," without disturbing valve position.



THE BRISTOL CONTROLLER can be plugged into back of receiver, placed at process, or used as a "blind controller." Available in on-off, proportional, proportional plus reset, proportional plus reset plus derivative, and proportional plus reset plus derivative. Experienced instrument men will recognize this as a unit service-proved by thousands of installations.*

*Licensed under C. B. Moore patents

LOOK FOR OUTSTANDING NEW DEVELOPMENTS FROM BRISTOL

BRISTOL

THE DEPENDABLE GUIDPOST OF INDUSTRY

When inquiring check CP 3408 on handy form, pgs. 2-3

SEPTEMBER, 1953

ing float inside flow stream and instrument components outside is magnetic — no stuffing boxes or pressure tight bearings are used. Since no electrical power is used, instrument is inherently explosion-proof and can be fitted in with pneumatic recorders, controllers, and indicators customarily used in these processes.

(Linameter variable area flow transmitter is manufactured by Penn Industrial Instrument Corp., Dept. CP, Penn Building, 4110 Haverford Ave., Philadelphia 4, Pa. . . . or for more information check CP 3409 on handy form, pages 2 and 3.)

No scale confusion because only one shows in use...

multi-scale meters have "shift" which allows only scale in use to be seen

Uses: Meters are available for all usual electrical quantities, can also be designed for specific needs.

Features: At time that electrical shift is made from one scale range to another, scale markings on meter face change to correspond.

Description: Multi-scale instruments expose only one scale to view at a time. Thumb wheel at left of instrument face allows for both automatic



Arrows point to high and low shift for scale and circuit

switching of circuitry and shifting of scale. This stands to eliminate human error both in reading instrument and in putting meter in such a situation that it could be damaged by overloading.

Five self-contained ranges of the standard model measure volts, milliamperes, microamperes and amperes. Used as panel instrument, meter is designed to meet standard JAN 3 1/2" dimension specifications. Portable instruments (shown) are designed for field or laboratory use. Combination handle and stand is useful on bench as well as for carrying.

(Multi-Dialer instruments are products of Marion Electrical Inst. Co., Dept. CP, 412 Canal St., Manchester, N. H. . . . or for more information check CP 3410 on handy form, pages 2 and 3.)

FACTS

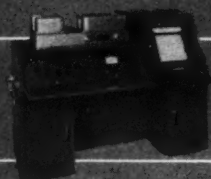
ON

INFRARED

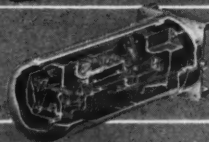
FOR THE

PROCESS PLANT

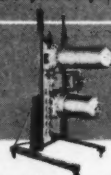
THE ONLY COMPLETE RANGE OF INFRARED
INSTRUMENTS TO MEET ALL REQUIREMENTS



FOR THE PILOT PLANT—Model 14 Multi-Component Analyzer—
Continuously records the concentration of up to six components in a pilot process stream on a six-minute cycle. Ideal for tracking the effects of temperature, pressure, etc., changes in a pilot stream.



FOR THE PROCESS PLANT—Model 93 BICHROMATOR* Analyzer
—For continuous control of liquid or gas streams. Records the ratio of any two wavelengths chosen. Thermostatted; enclosed in explosion-proof containers.



FOR THE PROCESS PLANT—Model 105 TRI-NON* Analyzer
—Highly stable and sensitive. Suitable where there is considerable interference from stream components. Thermostatted; enclosed in explosion-proof containers.

*Trademark The Perkin-Elmer Corporation

The Perkin-Elmer Corporation, 830 Main Avenue, Norwalk, Conn.
Southern Regional Office: New Orleans, Louisiana

For Optical Design and Electro-Optical Instruments

PERKIN  ELMER

When inquiring check CP 3411 on handy form, pgs. 2-3

How to Simplify Pilot Stream Analysis

PROBLEM:

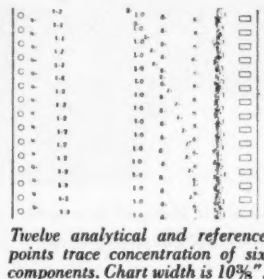
1. To determine *instantaneously* effects of changes in temperature, pressure, flow rate, etc., in the pilot stream;
2. To perform *continuous* multi-component analysis on the pilot stream;
3. To measure reaction rates under stream conditions;
4. To determine infrared analytical points for future process plant control.

SOLUTION:

The Model 14 Multi-Component Analyzer.

Pilot plant problems require instruments with the flexibility of laboratory spectrometers and the ability to operate continuously, characteristics of the process plant analyzers. The Model 14 Multi-Component Analyzer, designed to solve the specific problems of the pilot plant, meets these requirements. It records continuously—on a six minute cycle—the concentration of up to six components in a liquid or gas stream. A multi-point recorder plots the absorption of the various components. The instrument is ruggedly mounted in a mobile console and may easily be moved to the location of the pilot stream. With proper accessories the instrument may also be operated as a single beam infrared spectrometer. The instrument may either be purchased outright or rented.

Perkin-Elmer manufactures a complete range of instruments and accessories for all types of infrared applications in the laboratory and in the process plant. Extensive laboratory facilities are maintained, and are available for evaluation of infrared analytical techniques for specific plant or laboratory problems. Complete information will be sent on request.



Twelve analytical and reference points trace concentration of six components. Chart width is 10 1/2".

INSTRUMENTATION

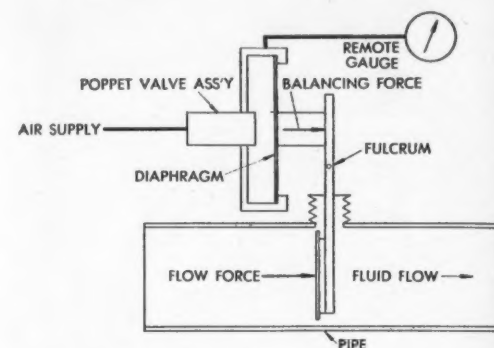
Velocity replaces head as key to flow . . .

long straight approach is unnecessary in vane-type flowmeter, handles pressures to 3000 psi

Uses: All types of fluids including normally hazardous ones can be safely metered with this unit.

Features: Explosion-proof flow transmitter can be mounted in any plane, needs no straightening vanes or long straight flow approach.

Description: Measurement of flow by flow velocity instead of pressure-drop taps has several distinct advantages. Since pressure-drop taps are



Velocity of liquid applies force against vane in pipe

not used there is no need for purging and no possibility of freezing of instrument lines. Metered fluid never leaves the pipe but remote indication (pneumatic signal) is obtained.

Design calls for circular vane attached to one end of lever arm. Diaphragm and poppet valve are located at other end. Position of fulcrum is determined so that desired multiplication of applied force of flow is available at diaphragm. Velocity of fluid past the vane moves lever arm. Diaphragm and poppet valve assembly maintain a force balance — necessary air pressure is transmitted as pneumatic signal of flow.

Unit may be used with pressures from 0 to 3000 psi on any size of pipe. Flow sensing element installs in any plane, has accuracy of 1/4 of 1%.

(Flovane flow transmitter is announced by Flovane Division, Link Engineering Co., Dept. CP, 13844 Elmira, Detroit 27, Mich. . . or for more information check CP 3412 on handy Reader Service slip, pages two and three.)

Density, level, thickness, etc followed by versatile radiation cell . . .

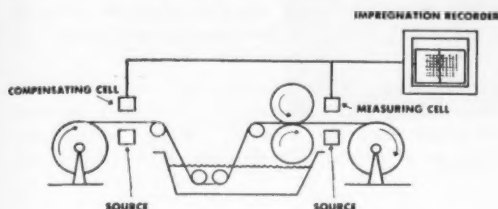
types are standardized, but can be used in flexible systems for a variety of purposes

Radiation cells are very similar in theory to ordinary electric batteries. Gas replaces the liquid electrolyte of the ordinary electric cell and ions are produced

INSTRUMENTATION

by radiation such as gamma rays. Polarity will depend on the placing of electrodes in the radiation cell, so that cell will produce "positive" or "negative" current at its terminals.

If a positive and a negative cell are used together with outputs added algebraically, resultant output becomes zero when cells are receiving equal amounts of radiation. Any changes in condition which simul-



Typical setup used for measuring thickness of coating applied to moving web

taneously affect both cells are automatically balanced out. However, any change in the amount of radiation received by one cell with respect to the other will cause a change in overall output — and removal of that condition will again make the output zero. Based on this, systems have been developed for measuring liquid level, thickness of applied coatings, density of a moving web, and other problems. Liquid levels may be measured from outside the tank without seals, purges, or other devices usually resorted to. Radioactive source placed on one side of tank (with a nearby compensating cell) has its radiations picked up by a cell on opposite side of tank. Extremities of pressures, temperatures, or corrosive action present no special problems.

Measurement of thin coatings on materials of variable density are easily made with the density gaging arrangement. Resultant combined current output is a function of coating being applied — all other variables are eliminated. In measuring density of a moving web, two sources and two cells are used. Standard sample is placed between one source and compensating cell, web passes between second source and measuring cell.

In batching granular materials, compensating for variation in average particle size is sometimes necessary. Density gage may be used to solve this problem since it can "inspect" density of material packed in batching container from outside.

Variety of cells are standard:

Model PR	Measuring gamma radiation in pipeline six inches or larger in diam
Model RT	For general area monitoring
Model CR	Used for small lines (four-inch and under)
Model I	Water-proof for large area.

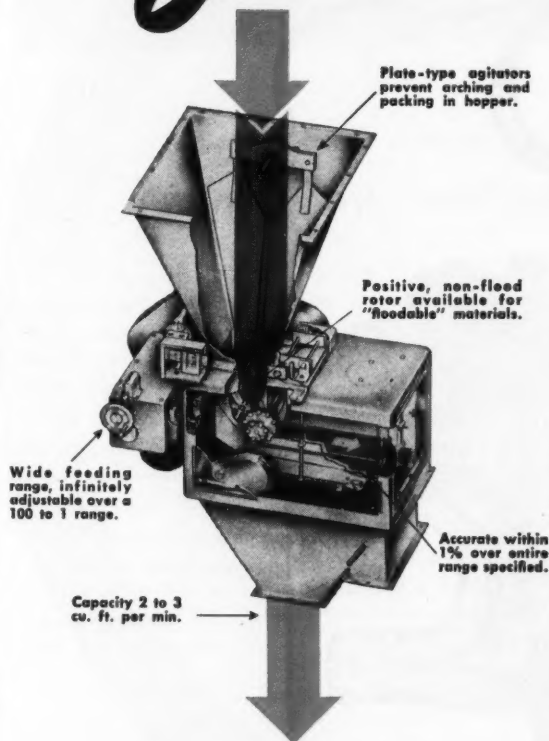
Cells are designed as units, and may be used separately or clipped together in multiples.

(Manufacturer of Radiation Cells maintains an engineering service whereby studies may be made to indicate feasibility of handling various industrial problems by means of these radiation cells. This work is being done by The Ohmart Corp., Dept. CP, 2347 Ferguson Road, Cincinnati 38, Ohio . . . or check CP 3413, pgs. 2 & 3.)

PUSH BUTTON CONTROL . . .



for Continuous compounding of dry materials



OMEGA



This six-feeder production line, built for one of the country's leading processors of fertilizers, is designed for complete push button control from a central control panel. The OMEGA BELT GRAVIMETRIC FEEDERS (Models 44-20A and 50-8) used in this system continuously weigh and feed superphosphate, potash, and other chemicals at a high production rate. Each feeder is totally enclosed, dust-tight, and built for continuous, accurate operation.

Flexibility, the keynote of the system, is shown by the pin-point control of all equipment from the central control panel. Proper components are selected for each formula, individual feed rates are adjusted by a simple handwheel, and automatic on-off lights show at a glance which feeders are operating. Auto-stop alarm devices prevent improper compounding, and chart recorders tell the overall story of chemicals fed in tons per day.

Find out for yourself how OMEGA continuous process equipment will boost your production and your business . . .

Send Coupon

OMEGA MACHINE COMPANY

387 Harris Ave., Providence 1, R. I.

☐ Send Bulletins 35-G5 and 35-F5B describing Omega Belt Gravimetric (Weighing) Feeders. ☐ Have sales engineer call.

Our process problem involves:

- ☐ Compounding dry materials.
☐ Proportioning liquids and dry materials.

Name

Company

Street

City State

When inquiring check CP 3414 on handy form, pgs. 2-3

NO Reducing Valve Needed

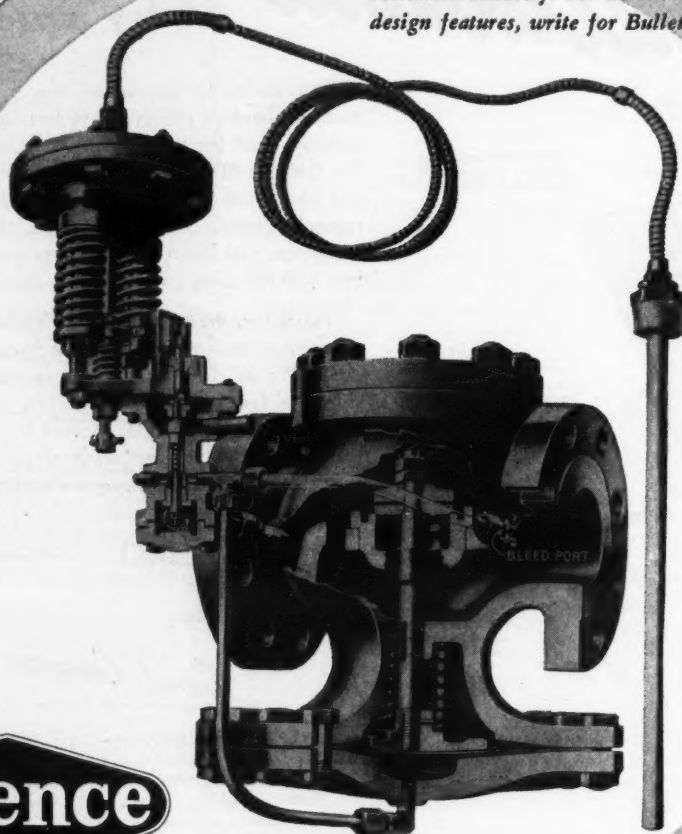
Here's real economy in temperature control.

Because Spence Temperature Regulators are designed to limit heater steam pressures to an adjustable maximum, the need for a separate reducing valve is completely eliminated.

The Spence Regulator takes steam directly from the boiler or high pressure line, reduces the pressure and regulates the flow as required to maintain a constant temperature output from the heater.

This means one relatively small combination pressure and temperature regulator replaces a reducing valve of the same size and a larger temperature regulator. Practically the entire cost of the large separate temperature regulator is saved. And, the total saving would also include the cost of a 3-valve by-pass along with all labor for installation.

This design feature is just one of the reasons for the thousands of Spence installations throughout American industry. For details of other important design features, write for Bulletin T50.



SPENCE
TYPE ET150
Temperature
Regulator

Spence

**SPENCE ENGINEERING
COMPANY, INC.**
WALDEN, NEW YORK

When inquiring check CP 3415 on handy form, pgs. 2-3

INSTRUMENTATION

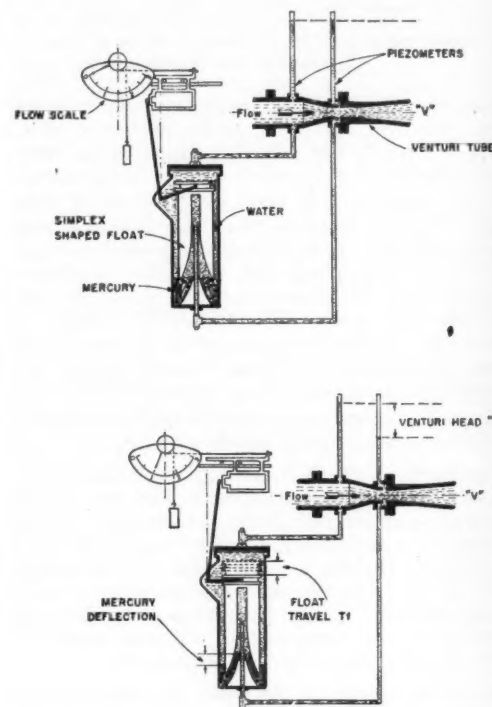
Square root corrected by float shape making meters read linearly from Venturi, etc . . .

variety of instruments handle liquids, gases, sludges, with $\pm 2\%$ accuracy

Uses: Provides accurate indication, record, and total for flow of water, gas, air, sewage, sludge, or other industrial liquids.

Features: Accuracy of instrument is $\pm 2\%$ at any point of scale over flow ranges as wide as thirteen to one.

Description: Flow instrument employs a mercury manometer with usual differential pressure elements such as Venturi, orifice, nozzle, etc. Change of mercury level in the manometer posi-



Diagrams above show float position at zero flow as well as at partial flow

tions specially shaped float which transmits signal to indicating and recording portion. Float shape is so designed that it corrects square root factor of head in the flow equation and makes instrument scale linear.

Manometer construction has further advantage of being self sealing for over pressure in either direction. Thus mercury loss from these causes is eliminated.

Separate indicating and recording scales are provided on instrument and standard scales range from 100,000 to 100,000,000 gallons per 24 hours.

Totalizing mechanism is mounted in the instrument so as to make counter type readout shown

GS-107

INSTRUMENTATION

in center of indicator scale face. Same mechanism that drives indicator arm sets relative position of a traction wheel on rotating disc driven at constant speed. Thus instrument continuously totalizes.

Indicating, recording, and totalizing units are housed in a cast aluminum case which is heavily ribbed and reinforced to prevent distortion. Door of case is grooved and sealed with rubber packing making the instrument dust and moisture proof when door is closed. Door may be locked to prevent tampering. Wall and panel mountings are available. Manufacturer also has available a variety of primary elements and instrument accessories.

(Type H Flowmeters are made by Simplex Valve and Meter Co., Dept. CP, 68th and Upland Sts., Philadelphia 42, Pa. . . or check CP 3416, pgs. 2-3.)

Frequency modulation used to measure temp signal in controller . . .

instruments with 400 to 3000°F maximums employ standard radio tubes

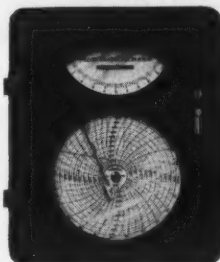
Uses: Electronic pyrometer controllers have a wide selection of temperature ranges from 0 to 400° to 0 to 3000°F.

Features: Frequency modulation principle is used to transmit temperature reading from measuring circuit to controlling circuit without loading measuring circuit.

Description: Temperature controllers actuate relays, electric contactors, solenoid valves, and motor valves to provide close temperature control of most types of heat load. Control system is built up of plug-in units so that basic model can be used for low-open, high-open, and low-high control. Model with additional plug-in unit makes proportional control possible and achieves virtually straight line control of heating appliance. Double control units are offered to provide low-open-high or low-normal-high control. All models are available with failsafe protection.

Controller consists of two separate units: the pyrometer unit (measuring) and electronic control unit. No mechanical or electrical connection is used between them — measuring element is not required to do any work in actuating control system. Coupling is maintained by a lightweight vane attached to pyrometer pointer which passes between coils mounted on control point spotter arm. Coils are connected to electronic circuit so that frequency of oscillation is changed when vane enters coil area. Change in frequency is used to actuate control relay.

(Free-Vane Controllers are products of The Bristol Company, Dept. CP, Waterbury 20, Conn. . . or check CP 3417, pgs. 2 and 3.)



BENDIX ULTRA-VISCOSON



measures, records and controls viscosity instantly, continuously, automatically!

This unique electronic instrument—the Bendix Ultra-Viscoson—provides instant, continuous and automatic viscosity measurement of hundreds of fluid materials in any stage of processing. All you do to get an accurate viscosity check is look at the dial. And all you do to install it is insert the small, rugged probe—by means of threaded connections—in a pipeline, kettle, pressure vessel, fractionating tower or tank.

In addition to indicating viscosity, the Bendix Ultra-Viscoson can be connected directly to any standard recorder or recorder-controller to automatically record and control viscosity in continuous processes.

You'll realize substantial savings, too, with a Bendix Ultra-Viscoson on the job. It completely eliminates costly work stoppage, sample taking, lengthy laboratory analyses and human error. Find out how you can improve your operation with a Bendix Ultra-Viscoson. Write today for complete information.

See the Ultra-Viscoson in operation at Booth 70-C, 8th National Instrument Conference & Exhibit, September 21-25, Hotel Sherman, Chicago.

FOR FULL
PARTICULARS
WRITE TO

CINCINNATI DIVISION OF
203 W. 3rd Street, Cincinnati 2, Ohio

Export Sales: Bendix International Division, 205 East 42nd St., New York 17, N. Y.

Simple ... Flexible ... Reliable!

No moving parts • Hermetically sealed probe • Operates in temperatures up to 650°F. and pressures of 1000 p.s.i. (special units available for higher pressures) • Measures in milliseconds • Remote operation • Permanently installed probe • Easily combined with remote recorder and automatic controls • Multi-probe and automatic temperature compensating systems available



When inquiring check CP 3418 on handy form, pgs. 2-3

INSTRUMENTATION

Feed volumetrically controlled in small unit for powders, dry materials . . .

will maintain 3% accuracy by weight over 20:1 range and can be checked with platform scale

Uses: Feeds small quantities of dry materials such as vitamin concentrates and various mineral supplements.

Features: Accuracy of 3% by weight over a 20 to 1 range is obtained by feeding orifice and gate adjustment calibrated to one thousandth of an inch.

Description: Occupying only 14 x 21 x 20 inches of space, disc feeder is a small precision device built for small throughputs. Uniform rate of feed is maintained by a 40 watt synchronous motor driving a slow moving feed disc. Changes in feed rates are obtained by adjusting micrometer gate which is calibrated to insure exact duplication



Feeder can be placed on platform scale to check operations without catching sample

of previously obtained feeds. Gate adjustment is applied to a large feeding orifice. Feeding mechanism itself features a controlled angle-of-repose for fed material which assures a uniform volumetric feeding regardless of changing flow characteristics of the chemical. Orifice is not easily clogged or changed in capacity by accretion. Thus major factors affecting feed rate accuracy (by volume) have all been considered.

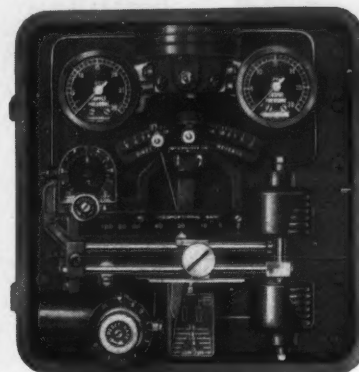
A small lamp which illuminates both feeding compartment and adjustment scale while feeder is operating, allows a full view of operations through transparent door. In order to check accuracy of operation, feeder can be mounted on platform

NEW MASONEILAN 12000 SERIES

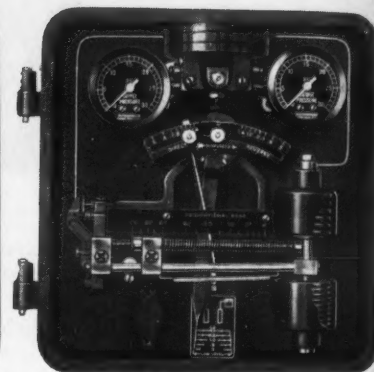
Easy to Select



Proportional Controller



Proportional-Reset Controller



Pneumatic Transmitter

20 INSTRUMENT COMBINATIONS

Proportional Controller, which may also be used as a Transmitter, and which may be converted *in the field* to a

Differential-Gap Controller by changing one piece of air tubing or to a

Proportional-Reset Controller by simple addition of the reset unit. Also

Pneumatic Transmitter; or if desired

Any Combination of Two of these — same or different units — in a larger case



Right Hand Mounting on Integral Chamber

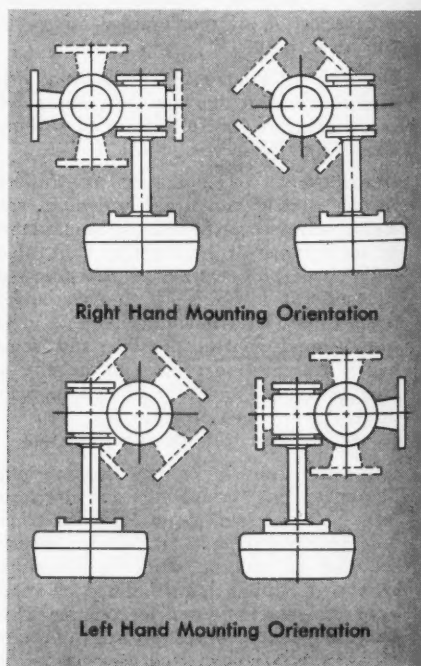
Left Hand Mounting on Mid-flange Chamber

2 INSTRUMENT LOCATIONS

The instrument may be mounted to left or right of the displacer — at the factory — or in the field. No special tools — no extra parts required.

2 DISPLACER CHAMBERS 8 ORIENTATIONS

The instrument may be oriented to connections in any of eight positions when one or more side connections are used. *Mid-flange* in displacer chamber permits field orientation (or, if preferred, integral chamber with factory orientation can be supplied). Top and bottom connections permit installation of *integral* chamber in any desired position.



Right Hand Mounting Orientation

Left Hand Mounting Orientation

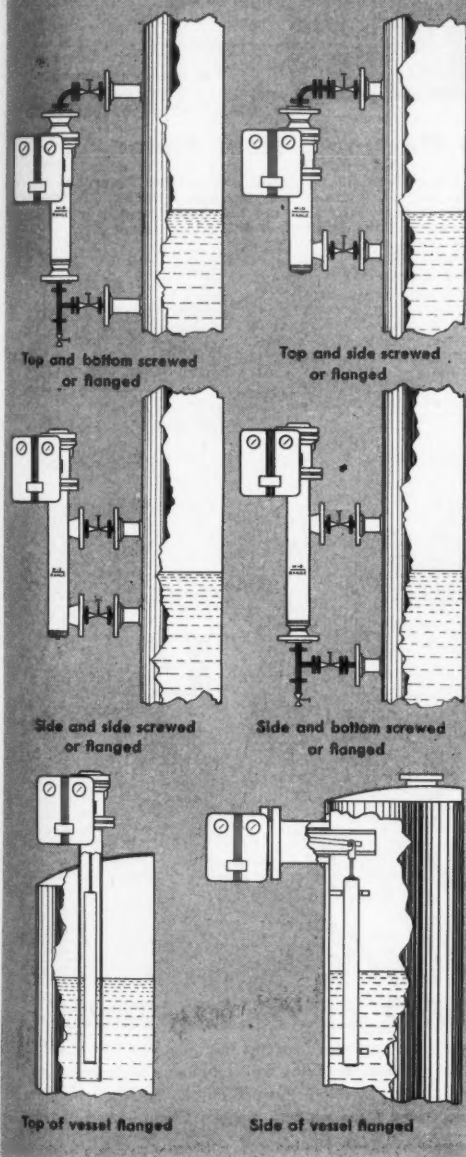
OVER 1,000,000 P

LIQUID LEVEL CONTROLLERS

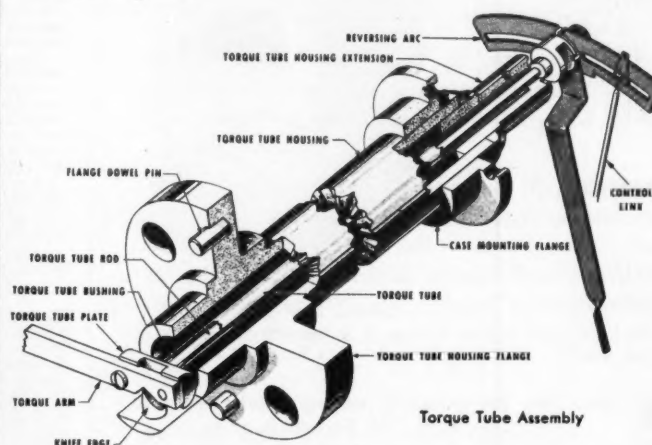
et and Install

10 TYPES MOUNTING CONNECTIONS

A type to meet requirements of any vessel



Save time — save money! Masoneilan 12000 Series offers widest scope of selection plus design features that permit installation without delay and cost of precise preliminary layout. Convertibility *in the field* — of type of control and of orientation of instrument position to displacer and to chamber connections simplifies selection and installation. Simplified dimension schedule further assists in installation plans.



9 TORQUE TUBE MATERIALS

Inconel (standard), K-Monel, Monel, Type 316 Stainless Steel, Hastelloy B or C, Nickel, Phosphor Bronze, Durimet 20.

CHAMBER or FLANGE MATERIALS

Iron, Bronze, Carbon Steel or various* Alloys available on some chamber or flange types — carbon steel or alloys on all types
*e.g. Stainless Steel, Monel, Nickel, Hastelloy, etc.

8 STANDARD RANGES

14", 32", 48", 60", 72", 84", 96", 120"
Special ranges available



**MASONEILAN
REGULATOR CO.**

1203 Adams Street, Boston 24, Mass., U. S. A.

POSSIBLE COMBINATIONS

When inquiring check CP 3419 on handy form, pgs. 2-3

INSTRUMENTATION

scales so that actual weight loss of material fed can be followed without necessity of catching samples. Unit can also be arranged to feed automatically in proportion to output of a primary pacer such as flow elements or gravimetric feeders.

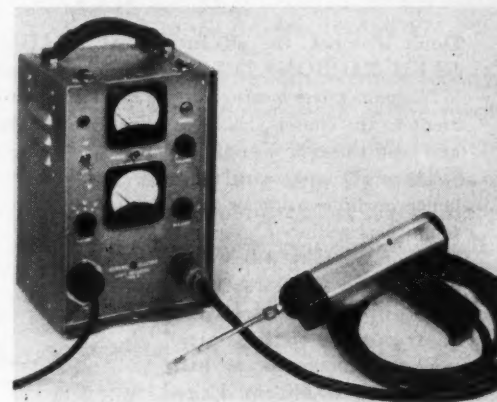
(Model 50 Volumetric Vitamizer is a recent development of Omega Machine Co., Builders Iron Foundry, Dept. CP, P. O. Box 1342, Providence 1, R. I. . . or for more information check CP 3420 on handy form, pages 2 and 3.)

Size of a portable typewriter, leak detector has speaker built-in . . .

voltage stabilizer, formerly external, has been incorporated in unit also

Halogen-sensitive leak detector has been redesigned and now incorporates a loud speaker and internal voltage stabilizer.

Especially useful for detection of leaks in closed systems, instrument can find pinholes so small that only 1/100 of an ounce of gas would pass through the opening in a year. Loud speaker is used to give audible warning of leak and an automatic balancing



Weight = 17 pounds

circuit compensates for changes in background air contamination to prevent confusion with noise produced by it. External voltage stabilizer of older models has been incorporated as a light-weight unit in present instrument.

Redesigned model retains several features of the older instruments such as earphone plug and instrument indication of leaks. Now, however, leak indication can be simultaneously indicated by means of dial, earphone attachment, or through built-in loud-speaker.

Detection equipment consists of pistol-like "sniffer" and 17-pound control box which is about the size of a portable typewriter.

(Type H-1 leak detector is a development of General Electric Company, Dept. CP, Schenectady 5, N. Y. . . check CP 3421 on handy form, pages 2 and 3.)

BIDDLE Instrument News



The reed tells the speed

... and this little booklet tells the story of resonant reeds. It's an interesting and practical presentation of the phenomenon of resonance as applied to the measurement of speed through the use of a set of tuned steel reeds mounted in a case with a scale calibrated in rpm.

IF YOU WANT QUICK, ACCURATE READINGS WITH SAFETY

Don't overlook the advantages of FRAHM® RESONANT REED TACHOMETERS for hand or permanent mounting.

No contact with moving parts is required. Just touch the instrument to the chassis, frame or housing of the machine or motor and read the rpm directly.

There are no moving parts, hence no lubrication or maintenance is required. Accurate to $\frac{1}{2}$ of 1%, they will operate continuously for years without any appreciable change. Instruments with limited ranges available for as little as \$27. Practically any desired range within 900 and 100,000 rpm can be supplied.

Write for BULLETIN 31P8-CP.



JAMES G. BIDDLE CO.

ELECTRICAL TESTING INSTRUMENTS

SPEED MEASURING INSTRUMENTS

LABORATORY & SCIENTIFIC EQUIPMENT

1316 ARCH STREET, PHILADELPHIA 7, PA.

James G. Biddle Co.
1316 Arch St., Phila. 7, Pa.

Gentlemen:

Please send me Bulletin 31P8-CP.

NAME

JOB FUNCTION

COMPANY

ADDRESS

When inquiring check CP 3422 on handy form, pgs. 2-3

INSTRUMENTATION

Adds $\frac{1}{4}$ to 100 lb/hr of dry material within 1%

Uses: Small gravimetric feeder can handle as much as 100 pounds per hour of granular or lump material up to $\frac{3}{4}$ -inch size.

Features: Wide feed range permits 0 to 100% settings for any capacity from minimum 0.25 pound per hour to 100 lb/hr.

Description: Gravimetric feeder has been developed for applications in small-scale process



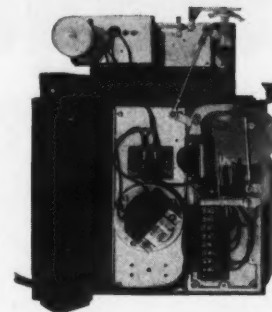
Requires floor space of 26 x 33 inches with 25 inch clearance front and rear

work where accurate low rates of feed and limited floor space are factors. Compact in design, it requires only 26 x 33 inches of floor area and 25 inches clearance for front and back doors. Feeder is accurate to 1% or better, delivering either powdered, granular, or lump material. Built-in totalizer registers pounds of chemicals which are fed.

Operation of feeder is simple: rate is set by single dial. No calibration is required. Timing or catching devices are unnecessary to determine rate of feed. As much as five cubic feet of chemical can be stored in hopper, and operation is dustless.

(Model GL-W, Size O Gravimetric Feeder has been developed by Omega Machine Co., Builders Iron Foundry, Dept. CP, 345 Harris Ave., Providence, R. I. Manufacturer can furnish detailed information about application of the feeder to process work, and can also furnish capacity selector for determining correct scale beam capacity... for information check CP 3423, pgs. 2 & 3.)

a new electronic flow meter!



electronic operation provides high speed and greater accuracy

continuous integration —no creep at zero

unaffected by normal voltage, frequency and temperature changes

3 to 1 range calibration at recorder

HAYS Electronic Flow Meter

Since the circuit is of the electronic null-balance type, it is unaffected by normal voltage and frequency variations. Also, neither temperature variations nor reasonable length of transmission lines affect the calibration of the instrument.

The pen-drive motor is built for reversing duty. Normal variations in voltage and frequency have no noticeable effect on its operation. The integrator is continuous in operation and simple in mechanical construction. A micrometer zero adjustment for calibration is easily accessible. Indicators can be calibrated to read directly in rate-of-flow or other factors as desired. Write today for Bulletin 52-1074-222.

hays
CORPORATION

Michigan City 34, Indiana

When inquiring check CP 3424 on handy form, pgs. 2-3



*All-Electric
Floatless*

LIQUID LEVEL CONTROLS

● Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 3425 on handy form, pgs. 2-3

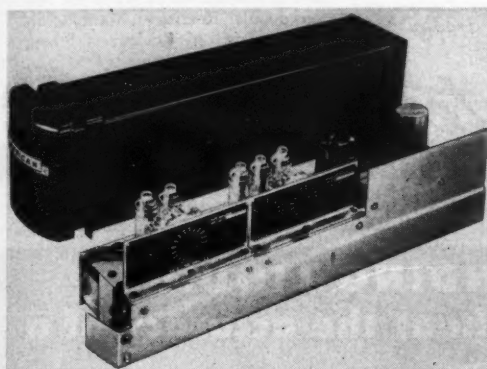
CHEMICAL PROCESSING

**New control system
is all electronic
and electric . . .**

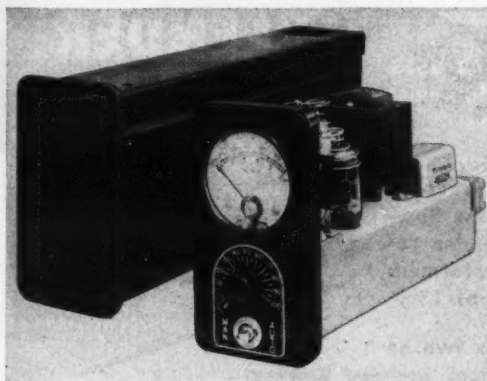
uses DC signal transmission — eliminates lag in long distance systems

Recently announced instrument system employs electronics and electricity for transmission, measurement, and operation. Instrument components have been developed for measuring and controlling temperature, pressure, differential pressure, liquid level, and flow. Use of electrical transmission virtually eliminates lag. DC signals of standardized voltages are used — instrument

components are therefore interchangeable regardless of variable being measured or controlled.



Electronic controller



Electronic manual positioner station

Manufacturer states that system's stability is so high that proportional bands can be narrowed with very sensitive action.

("American" Instruments are products of Manning, Maxwell & Moore, Inc., Dept. CP, Stratford, Conn. . . or check CP 3426 on convenient Reader Service slip between pages two and three.)



WHAT HAPPENED TO THE
TOWER TEMPERATURE
AT 7:00 THIS MORNING?



I DON'T KNOW. CHECK THE RECORDER.

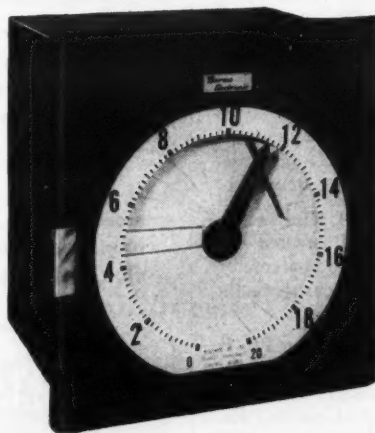
WHAT MAKES A RECORDER GOOD?

Many things. For instance, in the new Thermo Electronic indicating-recorder overall design is simple. The recording system only has three moving parts.

That's one thing. Here's another: the pen arm is driven from a cam. This permits linear charts to be used for almost all measurements, despite the non-linearity of the sensitive element characteristics. When warped or expanded scales are desired, special cams can be supplied.

Furthermore, nylon drive gears are used to provide long life and quiet operation.

There are many other things. If you want to hear about them, let us know. We'll be glad to supply the information. Ask for Catalog No. 60. R.



AT THE ISA SHOW

This indicating-recorder, along with T-E's other pyrometric equipment, will be at the Instrument Society of America Exhibit, Sherman Hotel, Chicago, Ill., Sept. 21-25, Booth 59.

Even if everything goes the way it should with any process where temperature is involved, sometimes it's important to prove everything went right. On the other hand, if something is wrong, if standards aren't met, then it's very important to know what went wrong in order to correct it. Was it temperature? Or some other process variable?

When an accurate temperature recorder is on hand, a quick check of the record will tell you if temperature was too high, or low, and for how long. If the temperature was off, your problem is pinpointed and you can work on it right away. If it wasn't, you can go on to other variables and find the troublemaker. Either way, a good recorder is a time-saver.

Thermo Electric makes a good recorder — it is accurate ($\pm \frac{1}{4}$ of 1% of the range), sensitive (better than $\pm 1/20$ of 1%), durable, and can be used to record variations in temperature, humidity, solution conductivity, speed, pH, direct current, DC voltage, strain, or other variables. Both potentiometer pyrometer and resistance thermometer bridge types are available, depending on the application.

Thermo Electric Co. Inc.
FAIR LAWN NEW JERSEY

When inquiring check CP 3427 on handy form, pgs. 2-3



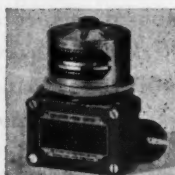
**FOR EXPLOSIVE
ATMOSPHERES**

MELETRON

UL APPROVED

PRESSURE SWITCHES

15 to 10,000 PSI • .05 to 80 PSI • VACUUM



Wherever a Vacuum or Pressure change must initiate electrical action there is a Meletron or Barksdale Pressure Switch to perform that function.



They protect costly equipment
They provide priceless safety
They assure process control.



They operate in any position,
are not affected by vibration,
have extreme repetitive accuracy.

For complete technical information see our catalog in Sweet's 1953 File for Product Designers and in the Plant Engineer's File, or write for catalog 2M-S.

**BARKSDALE
VALVES**

1566 E. SLAUSON AVE., LOS ANGELES 11, CALIF.

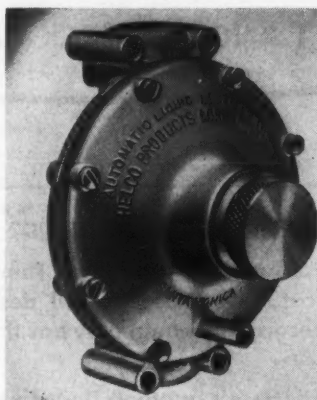
When inquiring check CP 3428 on handy form, pgs. 2-3

INSTRUMENTATION

**Maintains liquid level
by sensing head
of 5-20" . . .**

allows constant, low-head device to be closed system

Pressure reduction valve is designed for use at low heads of 5-20 inches of water. Device is very sensitive to outlet pressure and can be



Inlet pressures from 5 to 260 psi

adapted to uses in equipment where a steady head of water or other liquid must be maintained.

In operation it is comparable to a float valve, but has further advantage of allowing a closed system where sanitary or corrosive conditions warrant it.

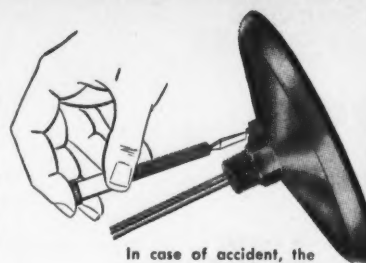
Control operates in a range of inlet pressures from 5 to 260 psi and can be set to maintain steady water level anywhere from 5 to 20 inches. Valve has been field tested for more than one year.

(Automatic Liquid Level Control Valve is a product of Helco Products Corp., Dept. CP, 2041 Colorado Ave., Santa Monica, Calif. . . . check CP 3429, pgs. 2 & 3.)

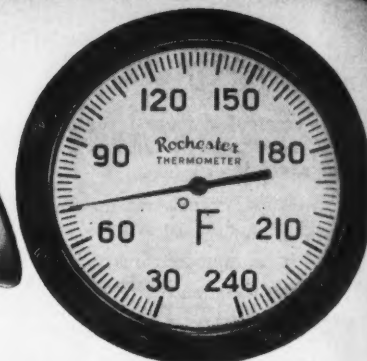
Shows midget meter at work

Single page, black and white data sheet is illustrated to show small purge rotameter in use for level measurements and flow measurements.

Bul 18 RB Supplement PR is issued by Schutte and Koerting Co., Dept. CP, Cornwells Heights, Bucks County, Pa. When inquiring specify CP 3430 on form, pgs. 2 & 3.



In case of accident, the simple screw adjustment permits quick, easy, on-the-job recalibration.



DON'T DROP IT! BUT IF YOU DO . . .

ROCHESTER DIAL THERMOMETERS are built to take severe blows without damage to their sensitive movements. But when hit hard enough to knock them out of adjustment, all you need is a screwdriver to put them right back on the job—as accurate as ever. This unique Rochester recalibration feature eliminates the danger of costly production errors due to inaccurate readings.

WELDED STAINLESS STEEL construction makes Rochester thermometers more durable, sensitive, pressure tight and resistant to corrosion than any before offered. Backed by 35 years of instrument making experience.

ORDER TODAY from your Rochester Representative, or write for further details. Rochester Manufacturing Co., Inc., 86 Rockwood Street, Rochester 10, N. Y.

Rochester

Manufacturing Company, Inc.
86 Rockwood St., Rochester 10, N. Y.

DIAL THERMOMETERS GAUGES AMMETERS



When inquiring check CP 3431 on handy form, pgs. 2-3

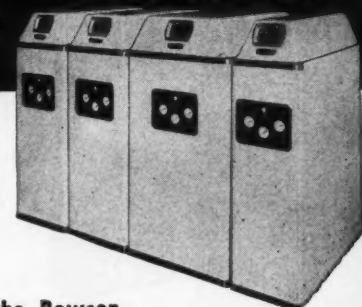
FOR BLENDING LIQUIDS
You can't beat the accuracy of a . . .

BOWSER
ESTABLISHED 1885

**AUTOMATIC
*BLENDER!**

*THE BLENDER THAT USES
XACTO—the world's most
widely used meters!

Actual operating records
prove that use of the Bowser
Automatic Blender results in constant formula
accuracy to 1/10 of 1%.



If you blend or mix two or
more liquids, chances are the Bowser
engineer in your vicinity can show you how to increase production,
cut costs and assure product uniformity. Call him TODAY!

Write for the new folder on Automatic Blending Systems

BOWSER

BOWSER, INC., 1315 CREIGHTON AVE., FORT WAYNE 2, IND.

REGIONAL OFFICES: ATLANTA • CLEVELAND • DALLAS
FORT WAYNE • KANSAS CITY • NEW YORK • SAN
FRANCISCO • WASHINGTON, D. C. • HAMILTON, ONTARIO

When inquiring check CP 3432 on handy form, pgs. 2-3

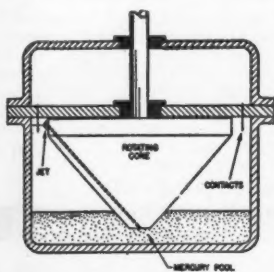
Squirting mercury makes contacts at ten per second rate . . .

high-speed switch dodges contact wear and inertia problems

Mercury jet switch is a high-speed, electrical, multi-point selector switch. Unit has very low transients, good switching characteristics. Developed to make rapid scanning possible, it shows possibilities for laboratory and industrial control.

Jet switch is considerably faster than switches of comparable noise level, it has been operated as fast as 1800 points per second with a noise level of only 20 microvolts across 200 ohms.

Mercury jet switch consists of a bakelite commutator having a circular arrangement of contact pins about the rotor. Fine jet of mercury is emitted from this rotor to scan each contact in sequence as rotor revolves. Mercury-wetted contacts are used so that



Centrifugal force draws mercury up and forces it through jet

switching takes place between liquid mercury surfaces. As shown in diagram, jet is mounted on upper edge of inverted cone whose apex is immersed in a pool of mercury. Inclined passageway inside cone serves to channel mercury which is driven by centrifugal force. Pump action is self priming.

Mercury emitted from the jet comes out in a continuous stream and serves to complete electrical path between the contact pin being hit and the mercury pool below. Expelled mercury drops back into pool. Baffles there prevent excessive swirling.

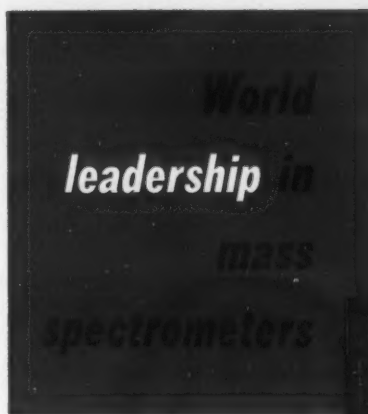
Switches built to date have as many as 60 contacts arranged in a 4-inch circle. These are made of 30 mil platinum wire. For higher voltages, 20 mil steel music wire contacts are used.

(Switch was developed by Mr. Rodney Hoff of General Electric Company, and his paper (No. 52-1-3) may be obtained by remitting 50c direct to Instrument Society of America, Dept. CP, 1319 Allegheny Ave., Pittsburgh 33, Pa.)

Outlines available types of electric control

Printed in two colors, four-page bulletin shows typical units which manufacturer produces for generator control, motor control, switchgear, and process controls. Automatic control systems can be custom built for industrial processes. Manufacturer's facilities are outlined in the publication.

"Electric Control" is issued by Lake Shore Electric, Inc., Dept. CP, 208 Willis St., Bedford, Ohio. When inquiring specify CP 3433 on handy form, pages 2 and 3.



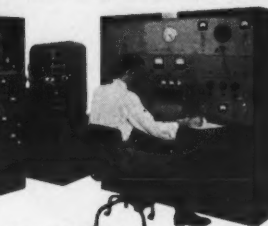
Model 21-201



Consolidated-Nier Isotope-Ratio Mass Spectrometers

For high-precision isotope-ratio measurements; medical, biological and chemical tracer experiments; cancer and metabolism research; catalytic studies; geological assays.

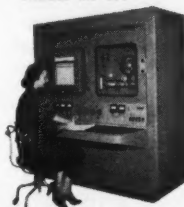
Model 21-103B



Consolidated Analytical Mass Spectrometer

For fundamental research in petroleum processing, chemical manufacturing, biochemical and molecular-structure investigations.

Model 21-401



Dual-Purpose Analytical Isotope-Ratio Mass Spectrometer

Provides both analyses of gaseous or light liquid mixtures and precise, recorded ratios of stable gaseous isotopes.

Model 21-610



Process Monitoring Mass Spectrometer

Meeting high standards of accuracy and sensitivity, this instrument delivers continuous, unattended service for analysis, process control, leak detection.

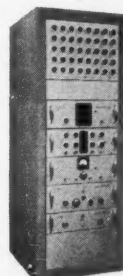
Model 24-101A



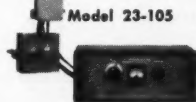
Mass Spectrometer Type Leak Detector

Portable, extremely sensitive; locates leaks in vacuum equipment, high pressure cylinders, compressor units, glass-to-metal seals, and welded joints.

Model 34-104



Model 23-105



Consolidated's Micromanometer

For absolute, high-accuracy micron pressure measurements, independent of gas composition. Range 0.1 to 150 microns, readable to 0.1 micron.

Consolidated's Spectro-Sadic

For high speed digital tabulation. Provides automatic programming of mass spectrometer; tabulates information onto IBM cards or electric typewriter.

Electrical Computer

Solves linear simultaneous equations; mass and infrared spectrometer analyses; electrical circuits, structures, aircraft flutter and statistics.

Ask for Bulletin CEC-1302-X2

Consolidated Engineering

CORPORATION

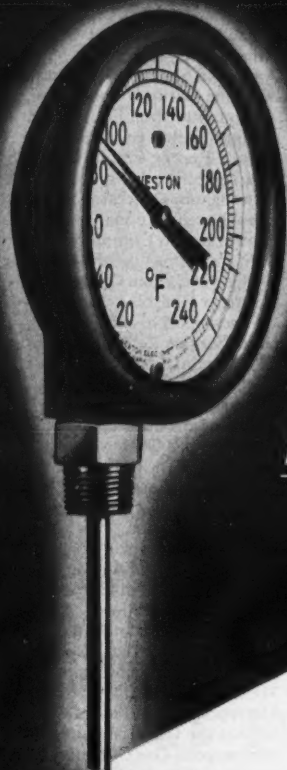
300 North Sierra Madre Villa, Pasadena 15, California

Sales and Service through **CEC INSTRUMENTS, INC.**, a subsidiary with offices in: Pasadena, New York, Chicago, Washington, D. C., Philadelphia, Dallas.

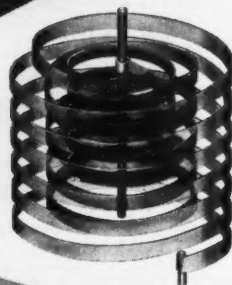
analytical
instruments
for science
and industry

When inquiring check CP 3434 on handy form, pgs. 2-3

Allied Chemical & Dye Corporation
 American Cyanamid
 American Steel & Wire Company
 Argonne National Laboratories
 Armour Research Foundation
 Atlantic Refining Company
 Atomic Energy Commission
 Bell Telephone Laboratories
 Birmingham General Hospital
 Brookhaven National Laboratory
 Brown, Boveri Company, Switzerland
 California Institute of Technology
 Carbide & Carbon Chemical Division
 Carthage Hydrocol, Inc.
 Celanese Corporation
 Cities Service Refining Corporation
 Commercial Solvents Corporation
 Cornell University Medical College
 Detroit Edison Company
 Dow Chemical Company
 E. I. Du Pont de Nemours
 El Paso Natural Gas
 Electro Seal Corporation
 Esso Standard Oil Company
 Ethyl Corporation
 Ford Motor Company
 General Electric Company
 General Petroleum Corporation
 Gulf Oil Corporation
 Humble Oil & Refining Company
 Institute of Gas Technology
 Jefferson Chemical Company
 Mayo Clinic
 Metropolitan Utilities of Omaha
 Milwaukee Gas Company
 Minneapolis Gas Company
 National Bureau of Standards
 National Radiological Defense Lab.
 Northwestern University
 Pan American Refining Corporation
 Phillips Petroleum Company
 Polymer Corporation, Ltd.
 Public Service of Northern Illinois
 Purdue University
 Richfield Oil Corporation
 Shell Oil Corporation
 Sinclair Refining Company
 Sloan Kettering Institute
 Socony-Vacuum Laboratories
 Southern California Gas Company
 Standard Oil Company of California
 Standard Oil Company of Indiana
 Standard Oil Company of Ohio
 Standard Oil & Gas Company
 Sun Oil Company
 The Texas Company
 Tide Water Associated Oil Company
 Union Oil Company of California
 University of Buffalo
 University of California
 University of Illinois
 University of Liege, Belgium
 University of Michigan
 University of Minnesota
 University of Southern California
 University of Washington
 University of Wisconsin
 U. S. Air Force School of Aviation
 Medicine
 U. S. Army Chemical Center
 U. S. Bureau of Mines
 U. S. Navy
 U. S. Rubber Company
 U. S. Veterans Administration Center
 West Virginia University



Why the
Weston
sensing element
is a
MULTIPLE HELIX!



Exclusively on
WESTON
all-metal THERMOMETERS



Although WESTON provides sensing elements of various forms for special applications, the element in all standard WESTON Industrial Thermometers is a *multiple helix* as illustrated above. Why the more costly *multiple*, instead of the single, helix? Just one reason. WESTON's twenty years experience producing bi-metal thermometers for industry has furnished convincing proof that the shorter, non-sagging *multiple helix* provides better accuracy, over longer periods. And while it provides other advantages, the one thing most thermometer buyers demand is long-term dependability. You get it, in extra measure, in WESTON Thermometers with *multiple helix*. WESTON Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J.

WESTON
Thermometers

When inquiring check CP 3435 on handy form, pgs. 2-3

INSTRUMENTATION

**Stands 300 psi
for wet or gas
service . . .**

miniature rotameter is rugged,
has 10:1 range

Uses: Miniature rotameter is designed for metering flow of purge fluids or for liquid level gaging.

Features: Instrument can be used for pressures to 300 psi. Each of several models has 10:1 operating range.

Description: Flow meter design uses horizontal inlet and outlet connections permitting meter to be mounted either in front of or behind instrument. Stainless-steel threaded inserts at inlet and outlet insure high thread strength and maintain connections leak-resistant even though instrument is frequently dismounted. Metering tube itself is of borosilicate glass.

Instruments are available to cover selected flow ranges between 0.05 cc per min and 0.65 gpm of water. Corresponding gas rates are 5 cc per minute to 0.90 scfm of air. Meter is just under five inches long and body is made of glass reinforced phenolic resin.

(Purgerator is a product of Fischer & Porter Co., Dept. CP, 14 Jacksonville Road, Hatboro, Pa. . . or for more information check CP 3436 on handy form, pages 2 and 3.)

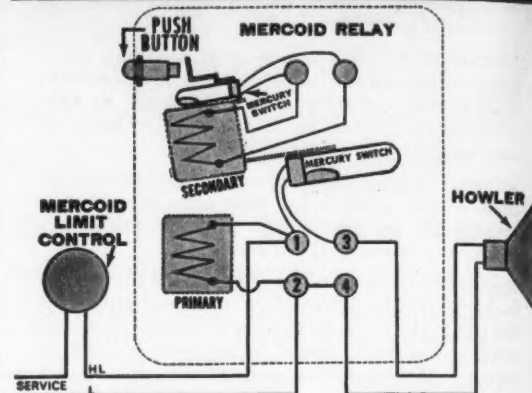
Explains control by conductivity

Four-page, two-color bulletin explains operation of electrolytic conductivity indicator and controller. Write-up compares bridge-circuit schematic to actual instrument, showing location of parts and construction. Specifications are given both for performance and of the physical characteristics of instrument.

Also included are drawings and descriptions of auxiliary equipment (coolers, cells, etc) for use with conductivity controller.

Bul 6639 is issued by Industrial Instruments Inc., Dept. CP, 89 Commerce Road, Cedar Grove, N. J. When inquiring specify CP 3437 on handy form, pages 2 and 3.

MERCOID RELAY FOR AUDIBLE ALARM

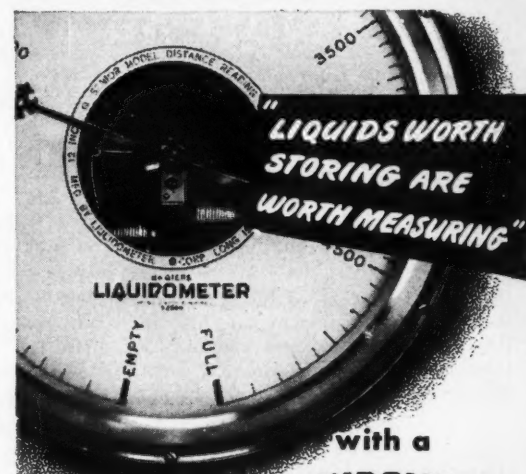


When Limit Control closes its circuit, current is supplied to primary coil of Mercoid Relay and through the normally closed mercury switch to the "Howler" (alarm). To stop "Howler," operator pushes in "push button" which manually raises relay secondary and breaks circuit to "Howler." Secondary is held up by magnetic repulsion until condition is corrected. When limit control opens the primary circuit of relay, secondary coil drops to normal position and relay is automatically ready for another operation.

WRITE FOR BULLETIN CA-8R

THE MERCURIO CORPORATION, 4201 BELMONT AVE., CHICAGO, ILL.

When inquiring check CP 3438 on handy form, pgs. 2-3



- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

with a
LIQUIDOMETER
Tank Gauge

WRITE FOR COMPLETE DETAILS

THE **LIQUIDOMETER** CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 3439 on handy form, pgs. 2-3

Half-watt signal is linear with applied pressure to 5000 psi . . .

gauge pressure potentiometer is available in several standard resistances

Uses: Transmits electrical signal which is linear with pressure in the composite range of 0 to 5000 psi.

Features: Powerful half-watt signal transmits well. Potentiometer is capable of attaining resolutions of 0.4%.

Description: Miniature gage-pressure potentiometer is designed for remote measurement of hydraulic and pneumatic pressure. Movement of Bourdon tube is transmitted to wiper contact on wire-wound resistance element by ball bearing



Actual size is 1 5/8" diameter

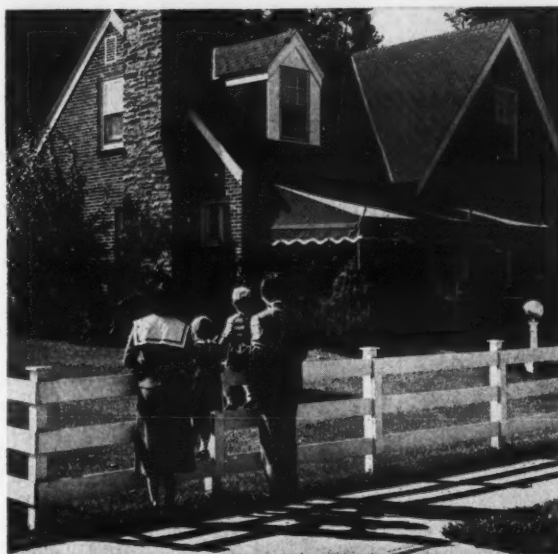
supported linkage system. Nine pressure ranges are available — lowest being 0 to 100 psi, highest is 0-5000 psi. Standard resistance values employed in this potentiometer are 1000, 2000, 2500, 5000, and 10,000 ohms.

Despite the large output signal of one-half watt, transmitter is small and light. Case size is 1 5/8" diameter by 27/32 inches. The miniature potentiometer weighs two ounces.

According to manufacturer's report transmitter is not subject to damage by shock, vibration or nominal over-pressure.

(Miniature Gage Pressure Potentiometer is a product of Bourns Laboratories, Dept. CP, 6135 Magnolia Ave., Riverside, Calif. . . or reader may secure more information by simply checking CP 3440 on convenient Reader Service slip between pages two and three.)

How would YOU solve these two problems?

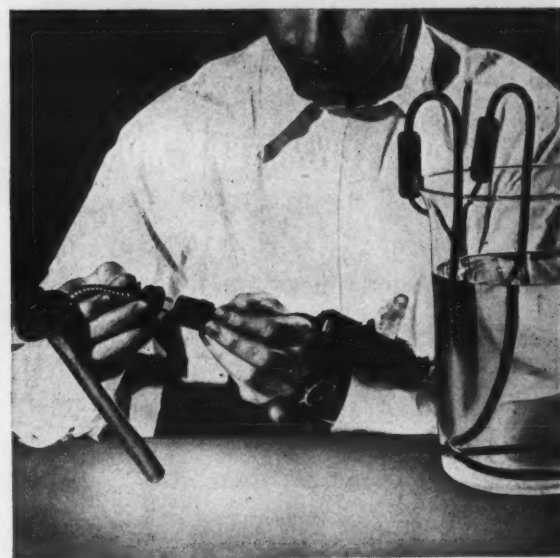


1. FLINTKOTE INSULATED SIDING is saturated with hot asphalt by a continuous conveyor process through a dip tank. Fenwal THERMOSWITCH® Thermostats, connected to pilot lights, warn when asphalt varies from safe operating level. The totally enclosed mechanism of the THERMOSWITCH units is not affected by the high heat (420°F) or viscosity of the liquid.



3. YOU, TOO, MAY BENEFIT from a Fenwal THERMOSWITCH Control.* Compact, highly resistant to shock and vibration, Fenwal THERMOSWITCH units have solved many types of temperature control problems throughout industry. The external, single-metal shell expands or contracts *instantly* to temperature changes, making or breaking electrical contacts.

*Cartridge Type Illustrated



2. LABORATORY WORK SAVED. Let one Fenwal All-Purpose Laboratory THERMOSWITCH thermostat do the work of many. This unit has a quick-disconnect plug — goes readily from job to job. It provides close temperature control for solids, liquids and gases. Stainless steel shell, resistant to corrosion, shock and vibration.



4. SEND FOR THIS NEW CATALOG for complete explanation of the unique THERMOSWITCH unit. Also ask for more detailed, illustrated discussions of the problems above. Fenwal engineers will be glad to help you solve your temperature control problems involving heat, humidity, radiant heat, pressure and other variables. Write Fenwal Incorporated, 249 Pleasant St., Ashland, Massachusetts.



THERMOSWITCH®

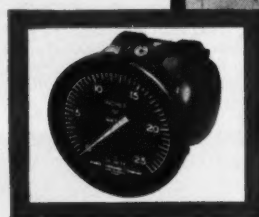
Electric Temperature Control and Detection Devices

SENSITIVE . . . but only to heat

When inquiring check CP 3441 on handy form, pgs. 2-3

test data proves...

BARTON FLOWMETERS MOST ACCURATE



Scientifically controlled tests, impartially conducted, to determine the comparative accuracy of several flowmeters of popular designs have conclusively proved the superior advantages of Barton's Dual-Bellows meter body. The Barton was the only flowmeter that averaged less than 1% deviation from perfect calibration over a 100°F change in meter temperature; others tested deviated as much as 3%. The ingeniously engineered Barton Meter Body insures a higher order of accuracy when the instrument is subjected to normal day and night air temperature variations.

Sustained accuracy is one outstanding Barton flowmeter advantage. In addition, the actuating element is compact, rupture-proof, yet highly sensitive, insuring a long life with high responsiveness. Problems associated with mercury, pressure bearings and over-ranging are eliminated.

Externally adjustable pulsation dampner eliminates pen flutter and chart painting. Torque tube drive assures absence of leakage and friction. Barton flowmeters are completely self-draining, or venting... need no sealpots. Install cost-cutting Barton flowmeters.

...request Barton Bulletin 11C-4.

*Pat. Nos. 2400048, 2500360, 2590324, other patents pending.

BARTON

INSTRUMENT CORPORATION
INDUSTRIAL INSTRUMENTS

1437 SOUTH EASTERN AVENUE, LOS ANGELES 22, CALIFORNIA

When inquiring check CP 3442 on handy form, pgs. 2-3

INSTRUMENTATION

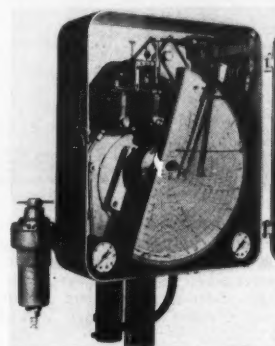
Calls for help and gets it when controlled load gets high...

controller can throw a second unit into action when flows reach predetermined point

Uses: Differential flow controller for change-over valves.

Features: Brings extra valve into play when flow becomes too great for one valve to handle.

Description: Differential controller for orifice meter measuring stations is specifically designed for wide variations of flow conditions. By turning



an additional measuring unit into the line when needed, instrument is capable of obtaining accurate measurement throughout very wide flow ranges.

When differential across primary orifice reaches predetermined maximum setting, controller actuates the four-way valve. This valve admits the supply from regulator to a cylinder which opens a second valve. This puts another meter into service in addition to primary meter. As load drops and differential of the two meters in operation falls below pre-set minimum, four-way valve is repositioned by controller. Pressure admitted to cylinder then closes second valve and shuts off secondary meter.

Orifice meter which actuates differential control mechanism also serves as primary measuring unit. No additional motor valve is required, cylinder-operated valve operates on 50 psi which may be obtained from line ahead of it. Minimum of 10 psi signal is required to actuate control unit.

(Differential controller is a product of Rockwell Manufacturing Co., Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. . . or for more information check CP 3443 on handy form, pages 2 and 3.)

Three papers: one subject — proportioning

Three illustrated, black-and-white technical reference papers describe proportioning of carbon black in rubber manufacturing, proportioning round cellulose acetate and plasticizer, and "pushbutton" proportioning of feed ingredients. Papers show typical equipment set-up with working dimensions and specifications in some cases. Operation of the system is described. Technical reference papers 53A, 53B, and 53D are issued by Richardson Scale Co., Dept. CP, Clifton, N. J. When inquiring specify CP 3444 on handy form, pages 2 and 3.

PALMER

MERCURY ACTUATED
Dial Thermometers now in three types to suit any requirements



Full 4 1/2" dial face. Stem can be placed at any angle and case can be rotated to any readable position.

1 Rigid Stem Dial Thermometer tapered bulb, interchangeable with standard industrial thermometer separable socket. (As illustrated above.)

2 Wall Mounted Dial Thermometer with flexible connecting armor. Case adjustable to easy reading position.

3 Flush Mounted Dial Thermometer for panel mounting with flexible connecting armor.

All three types have a full 4 1/2" dial face.

for accuracy: Mercury actuated . . . Fully Compensated by Invar Compensation. Guaranteed Accurate 1 scale division.

for angularity: Can be adjusted to most readable position at any angle desired.

for readability: Bold Black Numbers . . . 11" of scale Reading Dial face can always be placed in easiest readable position.

for interchangeability: Always specify "PALMER" Separable sockets as they are interchangeable for Dial or Industrial type Thermometers.

Send for Bulletin 51-129 for details on the New Palmer Dial Thermometer.

PALMER

THERMOMETERS, INC.
Norwood Ave., Cincinnati 12, Ohio
Mfrs. of Industrial Laboratory
Recording and Dial Thermometers

When inquiring check CP 3445 on handy form, pgs. 2-3

CHEMICAL PROCESSING

X FOR MEASUREMENT and CONTROL of VISCOUS FLUID FLOW...

the **ASKANIA** TRANSOMETER

Designed for fuel oil and other viscous liquids, the Askania Transometer accurately measures flow and transmits a corresponding pneumatic signal.

This signal can be in the range of inches w.c., to match equivalent gas flow measurement; or in the standard instrument transmitter range of 3-15 p.s.i.

Sturdy Askania construction, over-range protection, built-in integrator, wide range.

Write for Bulletin 125

ASKANIA  **REGULATOR COMPANY**
242 E. Ontario Street Chicago 11, Illinois
Subsidiary of General Precision Equipment Corp.

When inquiring check CP 3446 on handy form, pgs. 2-3

Wallace & Tiernan **MASSOMETER**

**FOR METERING
FREE FLOWING
SOLID MATERIALS**

Pneumatic
Recording
•
Maximum
Capacity
225 lb. per min.

Accuracy $\pm 1\%$
Overall Height—24½ in.

M-29

Write today for Description

WALLACE & TIERNAN
COMPANY INC.
25 MAIN STREET, BELLEVILLE 9, N. J.

When inquiring check CP 3447 on handy form, pgs. 2-3

INSTRUMENTATION

**Controls feeding of liquid
through air admission
to tank . . .**

from half-pint to 500 gallons
is one day's capacity

Uses: Liquid feeding device
can maintain constant rate run-
ning from one-half pint to more
than 500 gallons a day.

Features: Rate of liquid feed
is indicated by bubble frequency
in sight glass — no restrictions
are placed in line.

Description: Feeding rate of
device is adjusted by valve which
meters air admitted to supply
tank. There is no restriction to
flow of liquid — yet feed can be



varied evenly throughout entire
range. Each feeder includes com-
bination sight glass and bubble
type flow meter. Rate of flow is
indicated by bubble frequency.

Instruction materials are available
to suit specific liquids. All parts
subject to corrosion can be made
of stainless steel with teflon
gaskets. Various sizes are avail-
able depending on application
and these range from one quart
to hundreds of gallons.

(Liquifeeder is a development of
Hankison Corp., Dept. CP, 141
Biltmore Bldg., 951 Banksville
Rd., Pittsburgh 16, Pa. . . . or
check CP 3448, pages 2 and 3.)



WHAT DO YOU WANT TO MEASURE?

Brush Analyzers give you written answers — immediately

Measurements you need, static and dynamic, are greatly
speeded with versatile Brush Recording Analyzers . . .
You can obtain permanent chart records of data, to sim-
plify the analysis of pilot or process plant operation. The
charts are recorded automatically, and instantaneously.

You can carry the Brush Analyzer from job to job. Oper-
ation is simple, and demands no special skills.

Get the facts on time-saving Brush Analyzers now.
Brush representatives are located throughout the U.S.
In Canada: A. C. Wickman, Ltd., Toronto. For literature
write Brush Electronics Company, Department XX-9,
3405 Perkins Avenue, Cleveland 14, Ohio.

BRUSH ELECTRONICS

INDUSTRIAL AND RESEARCH INSTRUMENTS
PIEZOELECTRIC MATERIALS • ACOUSTIC DEVICES
MAGNETIC RECORDING EQUIPMENT
ULTRASONIC EQUIPMENT



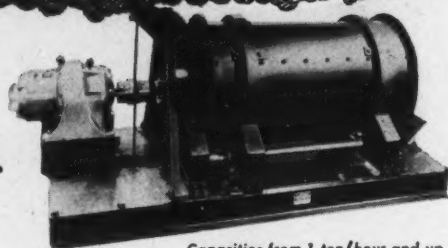
COMPANY

formerly
The Brush Development Co.
Brush Electronics Company
is an operating unit of
Clevite Corporation.

When inquiring check CP 3449 on handy form, pgs. 2-3

SNOWBALL PELLETIZING

IS THE MOST ECONOMICAL METHOD



Capacities from 1 ton/hour and up.

Snowball pelletizing with the Sinterite® Pelletizer has proved to be the most economical method for converting fine, dry or sticky materials into pellets or nodules of uniform size and consistency. Successfully used in processing agricultural and industrial chemicals for storage, shipping, preparing mixes for dryers and kilns, and a variety of other applications.

Pellet size, consistency, strength and special requirements, such as friability properties, can be varied over a wide range by adjustment of drum speed, angle of inclination, conditioning spray and feed rate.

Also available with paddle type agitation for economically producing fluffy, highly permeable, intimately mixed products.

COMPLETE TESTING LABORATORY maintained at Netcong, N. J. We will be glad to discuss your problems, test your materials and offer our recommendations to meet your requirements.



METALLURGICAL DIVISION
SINTERING MACHINERY CORPORATION

150 SINTER AVENUE, NETCONG, N. J.

When inquiring check CP 3450 on handy form, pgs. 2-3

Just right for your job!

high-precision thermistors by BENDIX-FRIEZ

As temperature measuring elements and liquid level sensors, these temperature responsive resistors are the best you can buy. In standard or special types, their high-precision manufacture makes them precisely right for your job when it comes to resistance values, size, temperature coefficient, mountings and quality. Ask us about applications.

STANDARD TYPES FOR IMMEDIATE DELIVERY

Size (inches)	@ +30°C.	@ 0°C.	@ -30°C.
.140 x .75	45.0 ohms	86 ohms	194 ohms
.040 x 1.5	12,250 ohms	26,200 ohms	65,340 ohms
.018 x 1.5	35,000 ohms	82,290 ohms	229,600 ohms

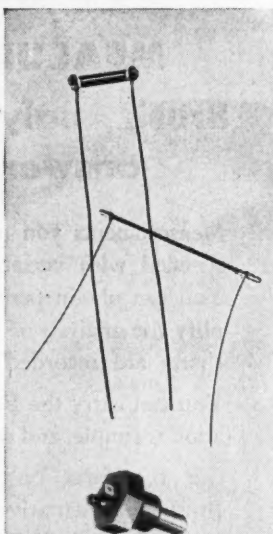
Write for information about Bendix-Friez Weatherman lobby installations.

FRIEZ INSTRUMENT DIVISION of . . .

1450 Taylor Avenue, BALTIMORE 4, MARYLAND

Export Sales: Bendix International Division
72 Fifth Avenue, New York 11, N. Y.

When inquiring check CP 3451 on handy form, pgs. 2-3



Used in this typical application for sensing the temperature of hydraulic oil.



INSTRUMENTATION

Remote Indicating units tie into audio-visual annunciator . . .

they can operate as part of plant-wide system

Adaptor unit permits remotely located visual trouble signals to operate as part of plant-wide audio-visual annunciator system. Remote visual signals are shown as illuminated back-lighted name plate units, or bulls-eye lamps with name plates. These may be used in scattered locations on panel boards or at operating locations in the plant as well as in central control rooms.

Bulls-eye lamps may be used with separate on-off lights forming a three-light control station. All signals connect to common horn or bell which must be acknowledged by operator when off normal condition develops.

Moving parts and contacts are enclosed in hermetically sealed units which are corrosion proof and suitable for Class 1, Division 2 locations. Additional signals may be added to system by plugging units into chassis receptacle.

(Remote Adaptor Cabinet is a development of Panalarm Products, Inc., Dept. CP, 6312 N. Broadway, Chicago 40, Ill. . . . or for more information check CP 3452 on convenient Reader Service slip between pages two and three.)

Details performance of regulators

Three-color, eight-page bulletin shows construction, operation, and typical performance of a whole series of instrument pressure regulators. Graphs of delivered pressure versus volume of air delivered show capacity and regulating ability of several types of these regulators.

Graphs included in bulletin allow supplied pressure requirements and air consumption to be estimated. Complete dimensional, mounting, and range information pertaining to regulators is included in publication.

Bul 4003 is issued by Moore Products Co., Dept. CP, H and Lycoming Streets, Philadelphia 24, Pa. When inquiring specify CP 3453 on convenient Reader Service slip between pages two and three.

Depend on AUTO-LITE

for Temperature Indication

You Benefit from Eye-Level Readings



Model F-1 temperature indicator

3-way adjustable mounting

Auto-Lite offers many thermometer styles, permitting plant-wide temperature observation at low cost. Standard temperature ranges from minus 60°F to plus 750°F. Send for latest catalog showing various types.

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION
TOLEDO 1, OHIO
NEW YORK • CHICAGO • SARNIA, ONTARIO

TEMPERATURE INDICATORS & RECORDERS

When inquiring check CP 3454 on handy form, pgs. 2-3

SHORT RANGE SPANS, HIGHLY SENSITIVE

The Taylor TRANSAIRE® Pressure Transmitter!

Designed to measure and transmit pressure changes up to 1,000 ft., it is accurate to 1/2% of the selected short range span and sensitive to pressure changes of 1/2" water.

- Short range spans available 20 to 40 psi. throughout range limit of 35 to 415 psia, and 50 to 100 psi. throughout 100 to 1,000 psia.

- Suppressed ranges throughout pressure limits.

- Volumetric type pressure system is extremely accurate, practically clog-proof, has corrosion resistant 316 stainless steel diaphragm.

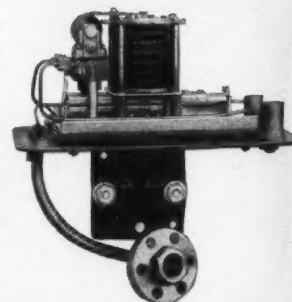
- Temperature and barometric compensation for higher accuracy of measurement and control.

Ask your Taylor Field Engineer, or write for Bulletin 98097. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

*Reg. U. S. Pat. Off.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 3455 on handy form, pgs. 2-3



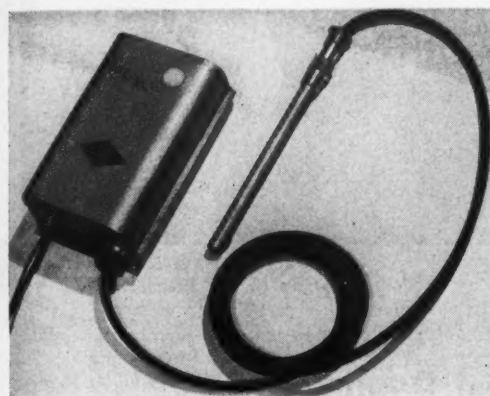
Capacity-relay level control operates remote station 1000 feet away . . .

porcelain enamel covered probe can locate level, interface, etc.

Uses: Instrument can be used for control of liquid level or to find interface of two liquids. It can be used with wide variety of materials.

Features: Controls provide for adjustment of liquid level and operating differential.

Description: Liquid level control is based on capacitive action of liquid surrounding porcelain enameled electrode. Unit consists of the probe which is mounted directly at location of control liquid, connecting cable which can be 1000 feet



Operating differential is adjustable

long if necessary, and control unit itself. Two main controls are provided. These are liquid level and operating differential controls. Both of these are screwdriver adjustments. Vernier liquid level control is operated by panel-front knob.

Differential range varies with type of service. In measuring ammonia, for example, control of standard unit operates between one and five inches. Wider ranges can be met with special units.

Standard models operate from 115 v 60 cps AC, and special units are available for operation with 230 v or 25 cps. Snap-action relay included in unit is rated for 10 amp at 115/230 v. Indicator light on panel front indicates operation of relay — it burns at full brilliance when relay is open, and half brilliance when closed.

(Belmont Level Control is a product of Thermo Instruments Co., Dept. CP, 1166 El Camino Real, Belmont, Calif. . . or for more information reader may simply check CP 3456 on convenient Reader Service slip between pages two and three.)

Determine Polyethylene Glycol Viscosity
in short order — see nomograph, page 222

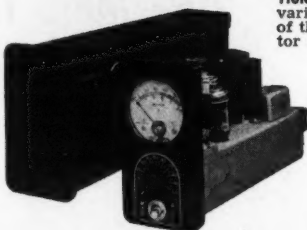
AMERICAN ELECTRONIC PROCESS CONTROL SYSTEM

Every advantage and superiority of electric transmission of measurement and operational signals is utilized in the new, complete American Electronic Process Control System. Quality of control of temperature, pressure, differential pressure, liquid level and flow is improved. Capital investment for a given through-put is reduced. Ideally suited for integration into automatic logging systems. Every requirement for accuracy, dependability, flexibility, low maintenance and convenient servicing is fully satisfied because this new electronic system provides:

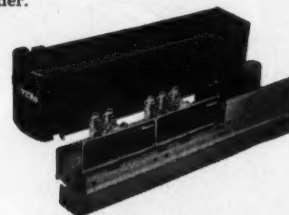
1. Practically lag-free signal transmission.
2. High stability that permits use of narrower proportional bands.
3. Control sensitivity virtually impossible to duplicate in other types of actuation.
4. Freedom from dirt, corrosion, leakage and freeze-ups.
5. Standardized control components interchangeable at the panel.
6. Control-house installed controllers, any distance from the process area.



AMERICAN ELECTRONIC TRANSMITTERS. Transmit measurements of temperature, pressure, differential pressure, liquid level and flow. Pictured is differential pressure transmitter with Barton cell.



AMERICAN ELECTRONIC RECORDING CONTROL STATION, TYPE 162. Records the value of process variables and determines the control points of the controller. Type 161 provides indicator instead of recorder.



AMERICAN ELECTRONIC MANUAL POSITIONER, TYPE 153MP. For remote loading of the Electro-Pneumatic Valve Positioner or an Electro-Pneumatic Transducer. Designed for use with Type 163 Controller.

AMERICAN ELECTRONIC CONTROLLER, TYPE 163. Automatically controls the manipulation of a process variable by means of the Electro-Pneumatic Valve Positioner or an Electro-Pneumatic Transducer.

AUTOMATIC LOGGING — continual tabulation of process values in digital form by an electric print-out device — is becoming of increasing importance to the economical operation of the process industries. The output of the instruments in the American Electronic Process Control System (0.5 to 5.0 milliamperes) is ideally suited to the input requirements of available automatic logging equipment.



AMERICAN ELECTRO-PNEUMATIC VALVE POSITIONER, TYPE 132C. Provides precise positioning of all standard pneumatically-powered valves by an electric signal. Useable with either air-to-open or air-to-close valves.

improves **QUALITY** of **CONTROL**
reduces **CAPITAL INVESTMENT**

7. Easy-to-service plug-in components in each instrument.
8. Adaptability—more than one input circuit can be fed into a controller for cascading purposes, without adding a relay.
9. Flexibility—output signal can be fed in series to any number of receivers, without impairing accuracy.
10. Transducers for tie-in with pneumatic systems.
11. Minimum capital or maintenance investment in air compressors, filters, pressure regulators or dryers.
12. Integration with analog and digital computational and print-out equipment.
13. Multipoint-potentiometer type recording of all process variables.

Major instruments in the American Electronic Process Control System are pictured here. Get complete data. Learn how this new system can improve quality of control and reduce the size and cost of your process equipment for a given through-put. Write for Catalog No. 164.

AMERICAN INDUSTRIAL INSTRUMENTS

A product of **MANNING, MAXWELL & MOORE, INC.** STRATFORD, CONNECTICUT

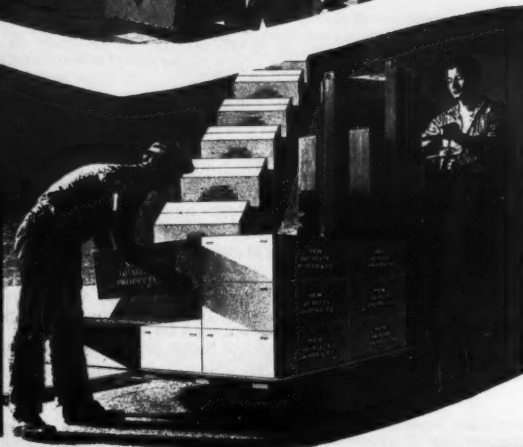
MAKERS OF 'AMERICAN' INDUSTRIAL INSTRUMENTS, 'HANCOCK' VALVES, 'ASHCROFT' GAUGES, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, AIRCRAFT PRODUCTS. BUILDERS OF "SHAW-BOX" AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES.

When inquiring check CP 3457 on handy form, pgs. 2-3

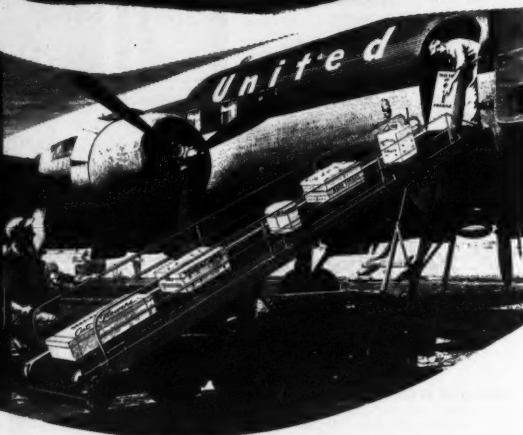
Eye-Catching
ATTRACTIVENESS



Easy-Handling
EFFICIENCY



Product-
Engineered
PROTECTION



Gaylord's famous *quality control*, seen and unseen, adds to the value of every Gaylord Box. For information and assistance with your packing problems, contact the Sales Offices listed under "Boxes (Gaylord)" in the classified section of your phone book.

GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS • Sales Offices Coast-to-Coast



CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

packaging

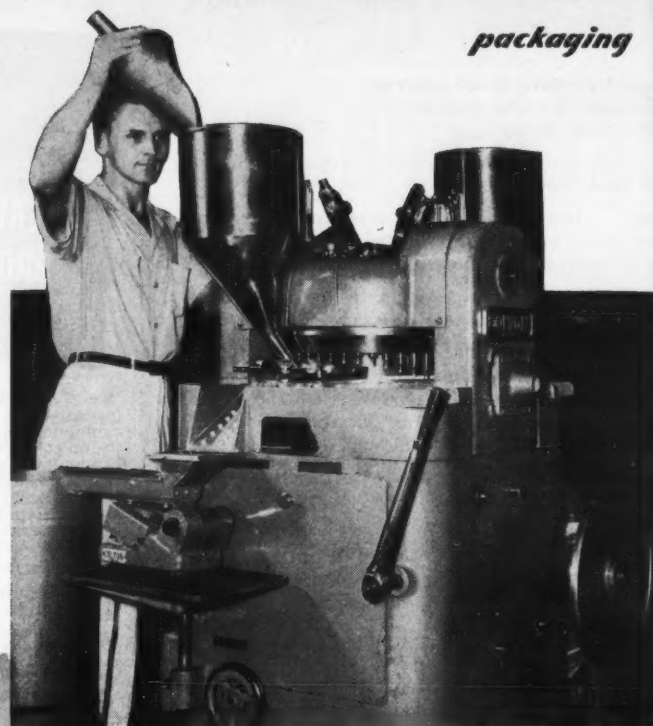


Fig 1—Rotary tablet press in operation at The Norwich Pharmacal Co.

Norwich Pharmacal Produces 20% More Tablets on Rotary Press

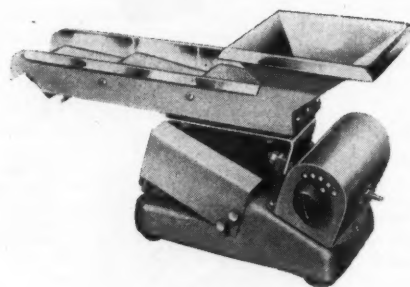


Fig 2—Tablet duster

Tablet duster saves labor by elimination of another operation

than the 100,000 tablets per hour average on other units in use.

Also, after the tablets are made on the other presses in operation, it is necessary to shake them over a barrel in a circular sieve for removal of dust. If possible, it was also desirable to eliminate this additional step.

Solution: The No. 241 Double Rotary Tablet Press shown in accompanying Fig 1 was acquired and placed in operation about one year ago. This unit has two stamping stations, permitting operation at a high speed. It is designed for production of all kinds of tablets from powders and granulations, as well as for preforming plastic materials. Micrometer cell

PROBLEM: The Norwich Pharmacal Co., of Norwich, N. Y., had to find means to meet expanding requirements for tablets. With the increased demand, it was desirable to provide equipment that would operate at a higher speed

adjustment makes it possible to obtain accurate tablet weight consistently. Press has a steel die table (not cast iron). Range of operating speeds to suit different types of tablet material is provided by a variable speed drive. Power is transmitted to the head through a Twin Disc clutch.

Rotary high tensile strength head is driven by heat treated, ground worm and worm gear running in oil (completely enclosed in housing) and helical pinion, which is said to materially reduce power consumption. Use of high speed drive counter shaft, mounted on anti-friction bearings, eliminates the need for an extra weight flywheel and permits the use of a 2 hp, 1800 rpm motor. Complete accessibility to all working parts is provided.

Press utilizes a No. 30 Tablet Duster, a photograph of which is shown in Fig 2. Tablets pass over a stainless steel, inclined screen. Sufficient vibration is applied for removal of dust, which falls through the screen into a container. As the tablets fall from one step to another, they turn over, allowing both sides to be dusted.

Results: An average production speed of 120,000 tablets per hour is obtained on the rotary press at Norwich, in comparison with about 100,000 per hour on other units. This 20% higher rate is considered to be an important increase. The attachment saves the labor of an additional dust removal operation. This saving in labor is at least 10% and probably more.

Machine presents a neat appearance and is smooth and quiet in operation. It is considered to be easy to operate by the men who use it. They like it because of the labor saving features and the dusting attachment. Unit does require a uniform granulation for the high production speed. Some problems arose with maintenance when it was first placed in operation but it has operated practically maintenance-free during the past several months.

(Product of Arthur Colton Co., Div., of Snyder Tool & Engineering Co., Dept. CP, 3400 E. Lafayette Ave., Detroit 7, Mich. . . . or for more information check CP 3458 on handy form, pages 2 and 3.)

**Twenty tons of product per hour
turned out by bulk packer . . .**

two-man crew handles unit packing material
in 2000 lb cartons

Uses: For automatically weighing and delivering bulk chemicals or other products to giant-size cardboard boxes. Typical products handled include synthetic resins, powders, lime, cement, feeds, and flour.

Features: Two-man crew running the bulk packer can turn out one 2000 lb, fully-packed, ready-to-ship box every three minutes — 20 tons of product per hour. Carton loads vary between 1000 and 2000 lb, depending on the density of the product.

(Continued on next page)

Chase Bag makes

POLYETHYLENE
BAG AND DRUM
LINERS



MULTIWALL
BAGS



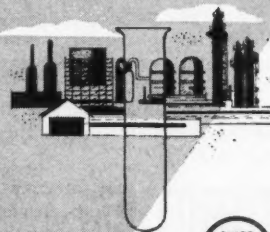
SHARKRAFT
BAGS



PROTEX
WATERPROOF
PAPER LINED
BAGS



for the Chemical Industry



Complete protection of your product
plus attractive appearance
... the result of
over 100 years experience
in designing and making bags.



CHASE BAG COMPANY

GENERAL SALES OFFICES 309 W. JACKSON BOULEVARD
CHICAGO 6, ILLINOIS

30 BRANCHES AND SALES OFFICES STRATEGICALLY LOCATED



When inquiring check CP 3459 on handy form, pgs. 2-3

NOW!

THE
DYNACLONE[®]

PATENTED

The **ULTIMATE** in Dust Filters



- ① **CONSTANT SUCTION**
AT DUST SOURCES
- ② **SELF CLEANING**
FOR CONTINUOUS
OPERATION
- ③ **NO AUXILIARY
MOTORS OR BLOWERS**
(THE MAIN OPERATING FAN DOES
THE CLEANING)

④ **NO ABRASION OF BAGS BY THE CLEANER**

The traveler (T) is open to atmosphere by means of a 4-inch flexible hose. As the traveler contacts the open end of each bag, the negative pressure which exists in the dust chamber draws a blast of air (from the atmosphere) through the bag to thoroughly clean it.

Each bag is cleaned, on an average, once every five minutes, thereby assuring uniform suction at dust sources.

The Dynaclone has now been in operation in many different industries for the past three years. More than half of present orders are from the same customers.

SEND FOR BULLETIN . . .

NO. 102



THE W. W. SLY MFG. COMPANY

4734 TRAIN AVENUE

CLEVELAND 2, OHIO

New York	• Chicago	• Philadelphia	• Syracuse
Detroit	• Buffalo	• Cincinnati	• St. Louis
Minneapolis	• Birmingham	• Los Angeles	• Toronto

SLY

PIONEERS & LEADERS
in INDUSTRIAL DUST CONTROL

When inquiring check CP 3460 on handy form, pgs. 2-3

PACKAGING

(Continued from preceding page)

Packer is reported to cut storage, packaging, and labor costs. According to manufacturer, a producer who now packs in 100 lb bags could save \$1.40 in packaging material and labor every time a carton is filled, or as much as \$50,000 in an average working year using unit.

Description:

Basic parts of the bulk packer are a hopper scale for weighing the product, a loading hopper, a turntable that holds four 3 x 3 x 5' cardboard boxes, and a packing auger. While one box is being filled, the other boxes are being prepared, strapped, or taken off the turntable. Finished container is supported on the

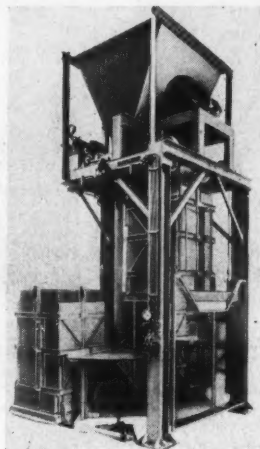
sides by wooden staves, on the bottom by a pallet, and on the top by a wooden cross-piece. Cartons can be collapsed and returned to packer for reuse, the number of times depending on the product.

Cartons are reinforced and located during packing by four steel jackets or jigs, set 90° apart on a 12' turntable, mounted on ball bearings. Operator first places a pallet on the roller-floor of one of the jigs and then installs a vertical wooden reinforcing stave down the middle of each side of the jig. Staves are held in place by retractable spring clips. Operator then places an empty carton on the pallet. After that he closes and locks the doors of the jig with the toggle latch.

After this preparation, operator rotates the turntable a quarter turn to the packing station. Latching mechanism automatically positions carton under a 12' packing auger driven by a 20 hp ball bearing gearhead motor. Elevator run by a hydraulic system raises carton and jig to the packing position. In this position, the shroud covering the auger is inside the container. Operator can manually control the entire ascent of the carton and jig.

Auger packing may or may not be used. It is not necessary to use auger with free-flowing chemicals. For finely ground materials, however, it is necessary. Auger is started when the jig reaches the top of its travel by an electrical interlock switch which also discharges the hopper scale. Product is forced into carton and packed by the auger both vertically and horizontally under 2000 to 3000 lb pressure.

As the carton fills, it is forced downward until it finally returns to its original position on the turntable. At this time, the carton is fully loaded

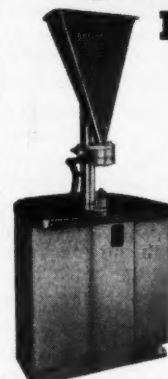


Can deliver a 2000 lb loaded carton every three minutes



VACUFLOW

Dustless
POWDER FILLING



Vacuflow powder filling equipment operates on a principle of vacuum feeding, instead of pressure, to pack powder into a container.

Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper.

There is no problem with dust control, since the unique Vacuflow method simply does not involve air currents that cause dust.

Semi-automatic models are available for filling containers ranging from the tiny talcum box up to and including 100 lb. paper bags and 200 lb. drums. Rotary models are available for automatic production of 5 lb. sizes or less at speeds of 45 to 300 per minute.

Pneumatic is the one manufacturer in a position to furnish machines for making up complete production lines. Units are available for air cleaning, powder and liquid filling, capping and labeling a wide range of bottles, cans or jars.

PNEUMATIC SCALE CORP., LTD.
67 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; San Francisco;
Los Angeles; Seattle; Leeds, England



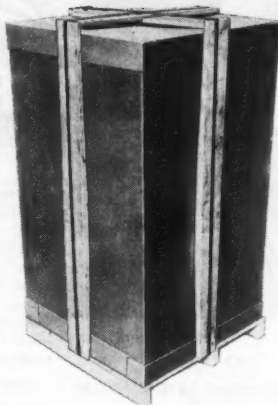
When inquiring check CP 3461 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PACKAGING

and packed. Proper packing pressure is automatically maintained at all times.

When the carton is packed, an operator rotates the turntable a quarter turn until the carton reaches the strapping station. The cover is placed on the carton; and on top of that, a wooden crosspiece whose ends match up with the vertical side staves. The carton is now ready for strapping. When using channel guides built into each jig, operator places two steel banding straps around carton staves and pallet, then tightens and seals them.



Cartons are reinforced with wooden staves

After strapping, operator rotates the turntable again. At the unloading station, he opens the doors of the jig and the strapped carton is rolled out onto a conveyor to be picked up by a fork truck for further handling.

In hopper-scale filling operation, a continuously-running screw delivers product from storage silos into a two-compartment hopper. Each compartment holds a carton load of product, 1000 to 2000 lb. Stream of incoming material pours into one compartment. When pre-set weight is reached, stream is automatically diverted to an adjacent compartment. One compartment loads while the other unloads.

(Cartons used in operation were designed by Container Corp. of America. Bulk-Pak-Bin Packer is development of Richardson Scale Co., Dept. CP, Clifton, N. J. . . . or for more information check CP 3462 on handy form, pages 2 and 3.)

Felt is quickly and firmly bound to metal and plastic surfaces by fast drying adhesive

Adhesive is available which has the property of rapidly and securely binding felt against many difficult surfaces such as metal and unsupported vinyl. It is said, to be excellent for gasket and insulating work. Fast drying properties of adhesive is another advantage. It is a solvent type adhesive, having a total solids of approximately 60% and a viscosity of 10,000 cps. Product is not affected by temperature or humidity changes. Application can be by brush, spray, or machine. No heat or pressure is required.

(No. 3636 Felt-Grip is manufactured by Adhesive Products Corp., Dept. CP, 1660 Boone Ave., New York 60, N. Y. . . . check CP 3463, pages 2 and 3.)

(Continued on next page)

How to fit "F" into your sales picture

It's a sure thing — Continental's handsomely lithographed "F" style cans will do wonders for your sales picture. As part of our Tailor-Made Package Service, we make these cans for liquid products in many sizes and styles and deliver them when and where you want them. We make available skilled engineering and research on as large or small a scale as you like. In short, we treat you as if you were our only customer. Let us show you how Continental cans and Continental service fit into your operations.

CONTINENTAL CAN COMPANY

Continental Can Building
100 East 42nd Street, New York 17, N. Y.



EASTERN DIVISION
100 E. 42nd St., New York 17

CENTRAL DIVISION
135 So. La Salle St., Chicago 3

PACIFIC DIVISION
Russ Building, San Francisco 4



When inquiring check CP 3464 on handy form, pgs. 2-3

Match THAYER SCALES against your toughest bagging or batchweighing problems

Speed · up to 12 bags per minute!

Accuracy · to within 1/10 pound!

Whether batchweighing for formulations or bagging for shipment, you can speed filling and weighing operations — and get greater accuracy too — with a Thayer-Fully-Automatic Net-Weighing Scale. Dry chemicals, plastics, etc. in powder, granulated or pellet form are readily handled by a unique feeding system that closely controls amount and rate of flow. Any free-flowing or flooding material may be handled with accuracy and speed. The entire weighing and discharging operation is completely automatic.

Thayer Net-Weighing Scales handle charges from 1 to 500 pounds. Exclusive shockproof leverage system — without wear-vulnerable knife-edge pivots — guarantees continued accuracy. Hopper and feeding system are stainless steel for maximum protection against corrosion and contamination.

Thayer Gross-Weighing Scales are also available for filling directly into bags, drums and cartons.

Checkweighing Problems? . . . write for information on Thayer Checkweight Scales which automatically indicate weight of filled container and then separate off-weight units from properly filled packages! Types available for packages weighing from 1 to 200 pounds at rates up to 60 packages per minute. Latest Model 1005 automatically checkweighs bags and cartons before they are closed!



THAYER
FULLY AUTOMATIC
net-weighing
filling scale

MODEL 600N
Write for detailed
description today!

THAYER SCALE AND ENGINEERING CORPORATION

492 EAST WATER STREET, ROCKLAND, MASS.

Where weight is worth money . . . it pays to be sure!

When inquiring check CP 3465 on handy form, pgs. 2-3

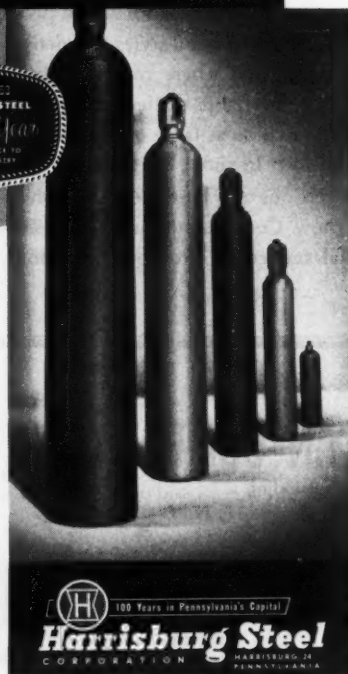
HARRISBURG CYLINDERS FOR HIGH-PRESSURE GASES

EXTRA MARGINS OF
SAFETY
AND
QUALITY
IN EVERY CYLINDER



Here are seamless steel cylinders for fixed, liquid, and medical gases . . . for every chemical processing operation . . . that are built to a standard, not to a price! Naturally they bear the century-old name of Harrisburg . . . which means extra margins of safety and quality.

Select the sizes and capacities you need from a complete line (range 14 to 400 cubic feet) . . . in both domestic and export types . . . each cylinder manufactured to I.C.C. Specifications, and rigidly tested to Harrisburg Steel's exacting standards. Write for catalog and prices.



Harrisburg Steel
CORPORATION
100 Years in Pennsylvania's Capital
HARRISBURG, PENNSYLVANIA

When inquiring check CP 3466 on handy form, pgs. 2-3

PACKAGING

Bag production speeded by better seam adhesive

An extremely fast-setting, resin-type emulsion called Resyn 3100 is for use as a seam adhesive on satchel bottom bags. Product is light in color, gives high coverage since it can be applied in a thin film, and leaves no residual odor. Excellent adhesion is said to be obtained on many difficult paper stocks. In addition, emulsion provides a degree of moisture resistance that is not obtainable from ordinary vegetable, bag seam adhesives.

According to manufacturer, adhesive should be of particular interest to manufacturers of bags that are fabricated from clay coated or kraft stock. Quick setting characteristics of the adhesive eliminate "leakers" or small unadhered areas along bag seams, particularly at score points.

(Product of National Adhesives, Div. of National Starch Products, Inc., Dept. CP, 270 Madison Ave., New York 16, N. Y. . . or for more information check CP 3467 on handy form, pages 2 and 3.)

Wood-fibre combination makes containers strong & light

Uses: For handling, shipping, and storing many diversified items.

Features: Material, called Ply-Veneer, has all desirable features of wood boxes and fibre cartons. It retains the stiffness and resistance to crushing of wood; offers light weight and smoothness of fibre cartons. Result is an easily printed, easily handled container, more rugged than any similar box or carton.

Description: Ply-Veneer is made of laminated Douglas fir veneer and kraft containerboard. Mechanical distension of veneer core allows moisture changes to take place without overall dimensional changes. There is no warping under cold storage conditions and stability is increased over that of untreated veneers. Outer layers of kraft provide high rigidity across the grain. Covered steel straps, sealed corners, and gapless construction are desirable features.

**WON'T
SMUDGE
•
RESISTS:
DIRT
GREASE
WATER
ACIDS**

LABELON
PLASTIC

Write on it
TAPE

**STICKS
WITHOUT
MOISTENING**



Nothing else like LABELON—the amazing "Write on it" plastic tape! Use it to mark test tubes, glass vessels, test batches, specimens . . . to identify circuit, panel boards, fuel lines, instruments . . . to label stockroom shelves, bins, hard-to-mark objects. Ideal, too, for office files, folders, stored records, etc.

**FOR TESTING,
DEVELOPMENT, STOCKROOM,
MAINTENANCE, ETC.**



Write to Dept. CP

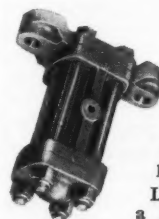
LABELON TAPE sticks without moistening to any smooth, clean surface — yet can be quickly removed. Resists heat up to 160°. Just write on it with pencil or stylus—message won't smudge. Choice of widths and colors. Handy dispenser with cutter bar.

See your nearest dealer or write for sample and prices.

LABELON TAPE CO., INC.
450 Atlantic Ave., Rochester 9, N. Y.

When inquiring check CP 3468 on handy form, pgs. 2-3

YOU GET **STEADY FLOW**
WITH
SPO
AIR
VIBRATORS



These low-cost units provide dependable hard-hitting vibration to keep bulk granular or powdered materials moving. SPO vibrators prevent jams in bins, hoppers and chutes . . . assure steady material flow at all times . . . eliminate production bottlenecks.

Long-lasting SPO vibrators incorporate a special corrosion-proof liner for full power starting, high speed operation and low air consumption. A complete range of types and sizes is available to meet all vibration needs.

1460-SI

Write today for Bulletin 50 for complete details.



SPO INCORPORATED

6531 Grand Division Avenue • Cleveland 25, Ohio

When inquiring check CP 3469 on handy form, pgs. 2-3

CHEMICAL PROCESSING

STRONGER...LONGER LASTING...ECONOMICAL...

"Built in seal"

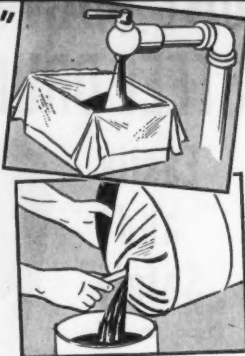
POLYETHYLENE LINERS

To assure greater product protection, "Built-In Seal" Polyethylene Liners incorporate an exclusive welded seal that actually exceeds the sidewalls in strength. The seal is warranted for the life use of the liner.

"Built-In Seal" Polyethylene Liners are chemically inert and non-toxic . . . water, moisture and air resistant . . . unaffected by temperatures from -75° to $+185^{\circ}\text{F}$. . . will not crack, split or run.

Made to your specifications for drums . . . barrels . . . cartons . . . corrugated cases . . . multiwall bags.

Send today for full information, including illustrated catalog.



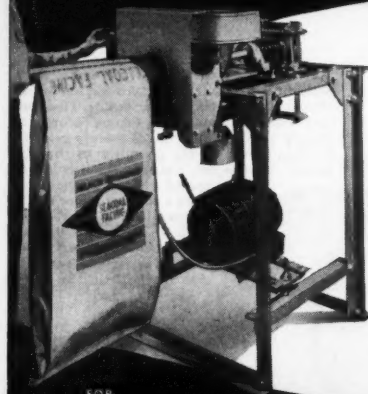
Plastic Packaging Company

730C N. Franklin St.

Chicago 10, Ill.

When inquiring check CP 3470 on handy form, pgs. 2-3

Investigate the 1953 BLACK DIAMOND AUTOMATIC valve bag packer



Designed to pack dry granular or powdered free-flowing materials

★
Push-button control
Moderately priced
Easy to install
Lowest maintenance costs
Performance guaranteed
★

FOR FURTHER INFORMATION
WRITE **BLACK PRODUCTS COMPANY**
TO 13513 S. CALUMET AVE. • CHICAGO 27, ILL.

MANUFACTURERS SINCE 1912

When inquiring check CP 3471 on handy form, pgs. 2-3

SEPTEMBER, 1953

PACKAGING

Containers are available in a variety of closures. They are manufactured to buyer-specifications and shipped flat for economy in transport and storage. They may be quickly assembled as needed. No special equipment is required.

Material is supplied in 1/10, 1/8, and 3/16" thick wood veneer faced with 42 or 90 lb kraft container-board. Overall thickness varies with facing used, but ranges from about 0.125" to 0.240". Approximate weight is from 0.31 lb/sq ft to 0.53 lb/sq ft. Standard sheet sizes are 48" trim width in 8, 10, and 12 ft lengths. Trim under 48" is optional and longer lengths are available on special order.

(Ply-Veneer is a product of Weyerhaeuser Timber Co., Special Products Div., Dept. CP, Tacoma 1, Wash. . . or for more information check CP 3472 on handy Reader Service slip between pages 2 and 3.)

Helpful hints for users of labels . . .

notes on how to have them made right

In order to obtain maximum satisfaction from labels, they must be ordered correctly from the printer. Many labels are made too short, allowing some of paste intended for lap to get on the can, creating a rust spot. Laps of 3/4" should be specified, regardless of how small the containers may be. Width should be 1/16" less than the distance between top and bottom flanges on double-seamed cans. A similar figure can be set for other types of containers.

Lap should be on the left end for most containers but can be on either end for hermetically-sealed cans. It is important for printed labels to have grain of paper running lengthwise. Ample time should be provided for making labels without a rush so they can be dried thoroughly. Label packs should be wrapped and stored in a dry place.

(Courtesy of Burt Machine Co., Dept. CP, Oliver & Barclay St., Baltimore 2, Md. . . or for more information check CP 3473 on handy Reader Service slip between pages 2 and 3.)

STOP VIBRATION



Special Korfund steel spring Vibro-Isolators support 15 large compressors and vacuum pumps at Courtaulds (Canada) Limited. The installation on the mezzanine floor, for better plant layout and lower construction costs, was made possible when Korfund guaranteed no vibration would be transmitted to upset the delicate electronic controls of this modern rayon plant.

with

KORFUND VIBRATION CONTROL

Korfund Engineered Isolation permitted equipment installation in this ideal spot for best plant layout, protected the electronic controls, saved the extra cost of piling required for a basement installation, and according to Courtaulds—*more than paid for itself in reduced construction costs alone.*

For less exacting installations, there are standard stock Korfund isolators. A selector chart is available, giving recommendations for both normal and critical conditions, for pumps, compressors, centrifuges, machine tools, presses, hammers, and most other processing and mechanical equipment. Write us for your copy of Bulletin No. 10 today, or see our catalog in Sweet's Files.

We'll gladly submit recommendations without obligation. Just contact us, or the Korfund representative you'll find in most principal cities. A half-century of experience is at your disposal.



THE KORFUND CO., INC.



48-13E Thirty Second Place, Long Island City 1, N. Y.
In Canada: 510 Canal Bank, Ville St. Pierre, Montreal

When inquiring check CP 3474 on handy form, pgs. 2-3

Republic WIRETEX

Rubber Covered Hydraulic Hose selector

SIZE
I.D.

5"
16

REPUBLIC RUBBER SPEC.	WIRE BRAIDS	HOSE O.D.	MAX. W.P.	MIN. BURST	APPROX. WT./100'	BEND RADIUS
W-18-31	2	3/4"	4500	18,000	37	5"

It's EASY to select WIRETEX! Simply move the slide until the needed I.D. size shows under the arrow or any known factors show on the selector. The Republic Rubber Spec. number will be the correct WIRETEX hose for you. It's EASY, too, to get one of Republic's new WIRETEX Selectors. This handy little slide fits right in your pocket (or desk drawer) and will unfailingly select the right Republic WIRETEX Spec. to fit any known factor. SEND FOR YOURS TODAY! Write to:

"Quality Hose Builders for over 50 Years"

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS



When inquiring check CP 3475 on handy form, pgs. 2-3

PACKAGING

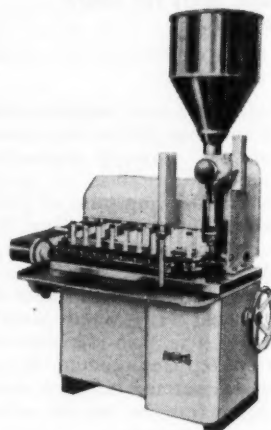
**Fills up to 60 tubes per min,
has automatic cap tightener
and no tube/no fill device . . .**

adaptable to a variety of tube sizes, closures, products

Uses: Tube filling machine can be used to proportion and fill a number of products ranging in viscosity from thick pastes to thin solutions. Primary uses in the chemical field are in filling paints, penicillin, and other creams or semi-liquids.

Features: Unit fills up to 60 tubes per minute and has a tube-holder system that automatically tightens caps. Filling nozzles will not operate if no tube is present. Tube capacity is from 1/2 to 1-3/4" diam, and from 2 to 7 1/4" length. With a special attachment machine can accommodate a tube length of 8". Plain or various crimped closures are readily handled by the multiple folding stations.

Description: Machine comes complete with self-contained electric motor and drive, and a paste container with a capacity of 10 gal-



Unit will accommodate tubes up to 1 3/4" diam, 8" long

lons. Special equipment for the unit includes: tube cleaning device for removal of dust and chips from empty tubes before they are filled; stirring device, necessary sometimes to maintain original consistency of paste in hopper; electrical heating attachment for hopper to maintain temperature of pre-heated pastes, creams, or liquids; and a jar filling attachment of the platform turret type.

On opposite page are general data applicable to unit:

ONE MAN LIFTS HEAVY STEEL DRUMS

Easily
and
Safely



Universal Drum Upending Bar works on lever principle . . . requires only 135 lbs. to raise a 450 lb. drum. An average man now does the work of the strongest man.

The Bar is made of 1" solid steel . . . cannot bend or break regardless of drum weight. It hooks firmly under and over the lip of the drum . . . the greater the load the tighter it grips.

Drum can't revolve during upending, nor "break away" to cause damage and injuries. The 33" long Bar keeps the man safely away from drum during upending.

Write for complete details. \$9.75 each, f. o. b. Los Angeles.

Some Territories Still Available for Distributors

MELCOOZ, Inc.

3018 SOUTH MAIN ST., LOS ANGELES 3, CALIFORNIA

When inquiring check CP 3476 on handy form, pgs. 2-3

LEVEL THE LOAD with a TWIN DISC HYDRO-SHEAVE

Do you know the simple and inexpensive way to solve starting load problems? By installing a Twin Disc HYDRO-SHEAVE on the output shaft of your electric motor. The motor can come up to maximum torque before picking up the load. Overloads merely cause the hydraulic fluid in the coupling to slip. The motor is protected. Another result is less demand current, sometimes even a smaller motor to do a bigger job. Level the load with a Twin Disc HYDRO-SHEAVE Drive and save money while you save machinery. Ask for Bulletin No. 145-B.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois
BRANCHED: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • YOKES

When inquiring check CP 3477 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PACKAGING

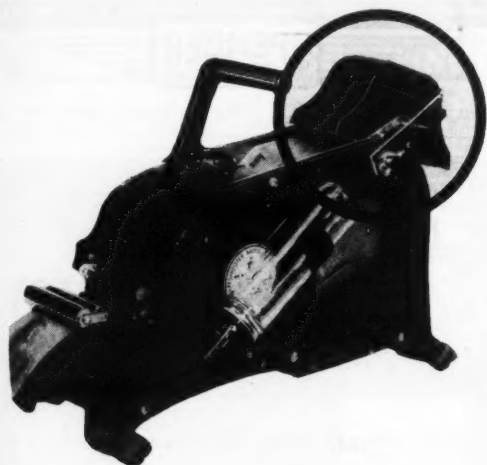
Output, tubes/hr	2400-3600
Attendance	1 operator
Electric Motor	0.5 hp
Speed, rpm	40-50
Floor Space	3'11" x 2'3"
Overall Height	5'7"
Net Weight	1100 lb
Gross Weight	1450 lb

All parts of the machine are easily accessible for adjustment, lubrication, or cleaning.

(Type GAB tube filling machine is a product of the Arenco Machine Co., Inc., Dept. CP, 25 W. 43rd St., New York 36, N. Y. . . or for more information check CP 3478 on handy form, pages 2 and 3.)

Tape is printed as used by unit which fits present dispensers

Having a number of uses in industrial and processing plants, this unit codes, stamps, or prints messages on gumtape as it is used. Attachment added to present machine virtually makes tape dispenser an automatic



Unit (circle) virtually makes tape dispenser an automatic printing machine

printer. There is a "Tape Printer" for any standard 3" automatic gumtape machine made, according to manufacturer.

(Product of American Tape Printer Co., Dept. CP, 678 Sixth Ave., New York 10, N. Y. . . or for more information check CP 3479 on handy form, pages 2 and 3.)

A company name and address . . .

at the end of each editorial article makes it easy for you to follow-up on process-improving ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

Security for Sensitive Chemicals— in Hackney Stainless Steel Drums

REMOVABLE HEAD OR TIGHT HEAD



Ship with safety in these Hackney Stainless Steel Drums. They're rugged and lightweight—assure complete protection for your products in transit or in storage.

Protection from Corrosion and Discoloration—Available in several types of stainless steel to suit product requirements. Also in nickel and monel metal.

Protection from Contamination—Drums easily and quickly cleaned for re-use—smooth interiors have no cracks or crevices where traces of the previous shipment can lodge.

Protection from damage in transit—Designed to take the hard knocks of shipping without danger of leakage. Heavy I-bar rolling hoops securely attached. Heavy curled foot rings for added protection. Good for years of service and many, many round trips.

Other Hackney Features that Assure Full Protection and Low Maintenance—

Removable Head Drums: Steel reinforcing ring in top curl for extra strength. Cover extends over top rim to keep out dirt when drum is opened.

Your choice of quick-acting Taggelite or bolt type closure. Furnished with or without rolling hoops, in 30, 50 or 55 gallon sizes.

Tight Head Drums: Full curled foot ring on both ends. Forged steel spuds, securely welded and protected by the rolling hoops.

Seamless heads attached by smooth butt weld—that leaves no crevice—assures easy cleaning.

Complete specifications are given in the new Hackney Drum and Barrel Catalog. Write today.

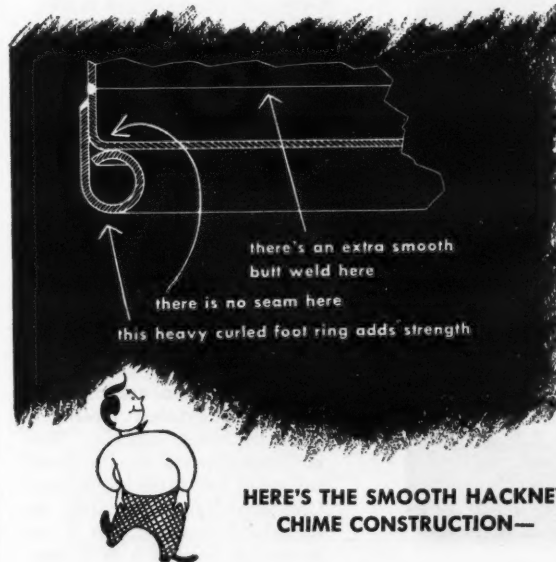
Pressed Steel Tank Company

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14
1387 Vanderbilt Concourse Bldg., New York 17
235 Hanna Bldg., Cleveland 15
936 W. Peachtree St., N.W., Room 126, Atlanta 3
208 S. LaSalle St., Room 796, Chicago 4
568 Roosevelt Bldg., Los Angeles 17
18 W. 43rd St., Room 19, Kansas City 11, Mo.

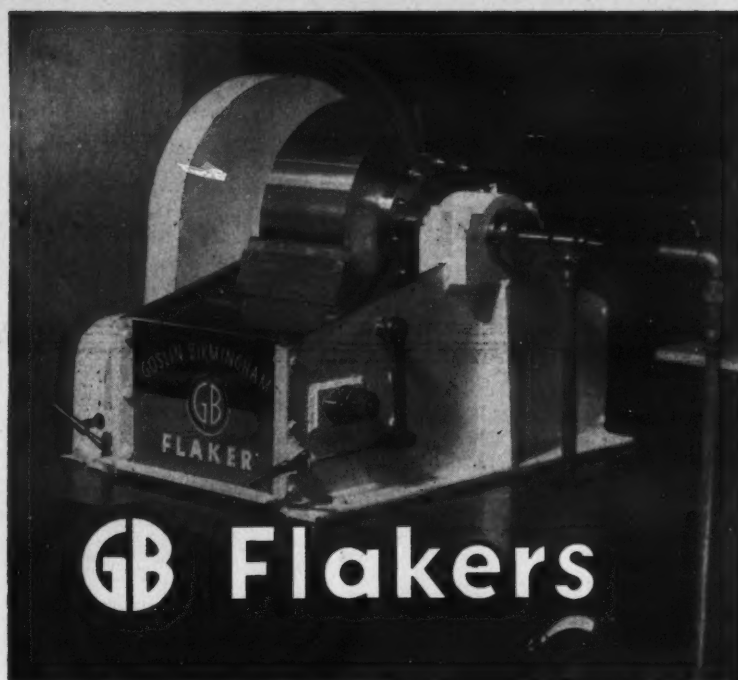


CONTAINERS FOR GASES, LIQUIDS AND SOLIDS



HERE'S THE SMOOTH HACKNEY
CHIME CONSTRUCTION—

When inquiring check CP 3480 on handy form, pgs. 2-3



GB Flakers for Conversion of Molten Materials to Finished Products

GOSLIN-BIRMINGHAM engineers have solved conversion problems for many plants by the application of one or more GB Flakers. Many materials which are produced in molten form can be converted profitably to finished products by flaking.

This all stainless steel research flaker has been installed by GB in its laboratory for the purpose of determining the flaking characteristics of customers' materials. Experienced GB process engineers are prepared to discuss your flaker applications and conduct flaker tests of your materials on this equipment without cost or obligations. Your inquiries are invited.

GOSLIN-BIRMINGHAM

MANUFACTURING CO., INC.

BIRMINGHAM, ALABAMA

CHICAGO: F. M. deBeers and Associates, 20 N. Walker

When inquiring check CP 3481 on handy form, pgs. 2-3

PACKAGING

Use of box machine saves space, cost

Uses: For making corrugated cardboard boxes in plant to size requirements of product to be packaged in pharmaceutical and other industries.

Features: Machine can make box blanks of any size, in any quantity, at any time. Thus, inventory of corrugated cases can be reduced, and exact-size cases can be produced in a short time from sheet stock.

This "box-making department" is said to use only 2500 sq ft of space in a plant — 500 sq ft is operating space, and 2000 is storage area for approximately 2 carloads of sheet stock.

Description: Only one operator is necessary. Machine requires no special knowledge of box making to operate, and is equipped with pushbutton electric size selectors for dimensional control. In one operation, machine delivers to conveyor accurate box blanks, slotted and scored in both directions, ready for folding, taping, or stitching. Rate of production is from 400 to 600 per hr. Dimensional changes can be made in less than 1½ min, according to manufacturer. Blanks produced are accurate to 1/16" on any panel. Unit will accommodate all grades of corrugated board, up to and including 350 lb double wall. Size range follows:

Length	7 to 36"
Width	4 to 18"
Depth	2 to 32"

Max combined width and depth — 36"
Min depth 1" where width is 5" or more

A larger machine is available capable of producing a box 74" long, 40" wide, and 44" deep.

(Product of Colt's Mfg. Co., Packaging Machinery Div., Dept. CP, Hartford 15, Conn. . . or for more information check CP 3482 on handy form, pages 2 and 3.)

Versatile machine counts, packs coated tablets

Brief description of a tablet counter for coated tablets is given in 2-page bulletin. Versatile machine can handle almost any count and many tablet sizes. Unit is designed primarily for the ethical producer, but it can be quickly converted to a high-speed production line machine.



If your cost of reclaiming materials is too high Spencer Vacuum can probably give you the answer. It not only picks up the valuable metals or dusts but conveys them to a closed container at any point in the plant. Gold, babbitt, enamel dusts, solder, welding flux (see illustration) and foundry sand are reclaimed by the ton every day. The same Spencer unit will clean your floors and do a dozen other disagreeable and expensive jobs. Ask for Bulletin No. 144.

with
**SPENCER
VACUUM**

THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT

SPENCER
HARTFORD

456-M

When inquiring check CP 3483 on handy form, pgs. 2-3

Quality Fabrics — FOR THE

Chemical INDUSTRY

"The Preferred Source of Supply"

"SAN JUAN" Cotton Duck
NUMBERED DUCK
IN ALL WIDTHS AND WEIGHTS

Filter Twills • Chain Cloths
Press Cloths • Enameling Duck
Selected Osnauburgs

Our technicians will gladly aid in creating industrial fabrics to your specification. We solicit your inquiries.



B. J. BARRY & CO.

INCORPORATED

62 WORTH STREET • NEW YORK 13
AKRON • BOSTON • LOS ANGELES • NEW ORLEANS
MILLS AT: Lincolnton, N. C. and Roanoke, Ala.

When inquiring check CP 3484 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PACKAGING

Bulletin includes discussion of operation, characteristics of unit, and general specifications of model illustrated.

Bul on Model 40 tablet counter is issued by The Lakso Co., Inc., Dept. CP, Fitchburg, Mass. When inquiring specify CP 3487 on handy Reader Service slip, pages 2 and 3.

Automatic dispatching of cases from source to receiving . . .

packages may be counted onto case-divider from supply lines

Uses: Mechanism provides a simple, positive means of controlling flow of packages from a single or multiple supply source and directing flow to receiving lines in a predetermined pattern.

Features: Case divider provides automatic dispatching. Device is so arranged that packages may be counted onto case divider from supply lines. Drop section at entry to divider serves as a control and will allow cases to be counted as they pass onto machine, stopping flow as required. If device is set to receive a counted allotment from any two sources and one is depleted, it will immediately and automatically take supply from third line, according to report.

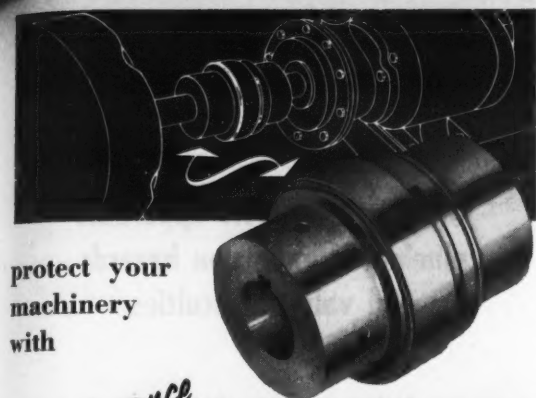
Description: Dividers are built in a variety of styles, both vertical or horizontal or to match customer's requirements. They are completely equipped with power drives, starters, and control panel. Equipment is also designed for other services with a variety of incoming line delivery line ratios. Cases and packages of different heights may be separately selected by the case divider.

(Product of Alvey Conveyor Mfg. Co., Dept. CP, Olive St. Road, St. Louis 24, Mo. . . or for more information check CP 3488 on handy form, pages 2 and 3.)

Company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS



protect your machinery with

maintenance free

LOVEJOY

FLEXIBLE COUPLINGS

When you install Lovejoy Flexible Couplings you get more than just long-lasting smooth power transmission. You get maximum protection against surge, backlash and starting torque. You get reduced down-time and less maintenance, since cushions can be changed without shutdown and Lovejoy Flexible Couplings never require lubrication. Accurately machined bodies and jaws and cushioning materials engineered to the load conditions are combined in a compactly designed coupling to keep your machinery running better . . . longer.

Types and sizes for all applications. Send for complete catalog . . . contains full technical data and handy selector charts for your convenience. Yours without obligation. Also Mfrs. of Lovejoy Speed Pulleys and Universal Joints

LOVEJOY FLEXIBLE COUPLING CO.
5072 West Lake St., Chicago 44, Ill.

When inquiring check CP 3485 on handy form, pgs. 2-3

Take an EXTRA Profit with **Weld-Bilt** Experience in Materials Handling!



One Midwest manufacturer saved \$90,000 on equipment cost alone because he called in a Weld-Bilt engineer FIRST, before deciding on expensive special-design units recommended to solve a

difficult handling problem. Our engineer, experienced in cost-saving shortcuts, showed how simple adaptation of more standard equipment could do the job even better.

This is the kind of service you can expect from WELD-BILT . . . a thorough analysis of your problems based on years of varied experience and wide knowledge, of handling problems . . . then a recommended solution that will do YOU the most good—in time and labor savings, in product protection, production speed-up—at the lowest cost. It may involve adapting standard equipment, custom-engineering new equipment—or merely realigning your present operations.

Call in the WELD-BILT Materials Handling Engineer for an economical solution to your problem today. You'll probably save money.

WEST BEND EQUIPMENT CORP.

322 Water St., West Bend, Wis.

MATERIALS HANDLING ENGINEERS

Portable Elevators • Pallet Trucks • Single Stroke Lift Trucks • Two-Wheel Trucks • Platform Trucks • Skid Platforms

When inquiring check CP 3486 on handy form, pgs. 2-3

SEPTEMBER, 1953

GREATEST

PERMANENT

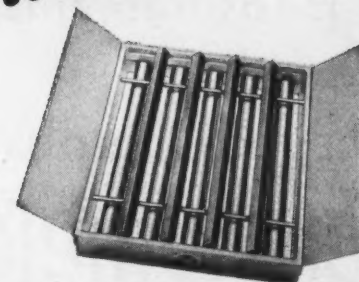
MAGNET

NEWS

IN

YEARS

it's NEW! **IT'S NEWS!**
THE **ERIEZ** PERMANENT NON-ELECTRIC
GRATE MAGNET



BRINGS *You* "TRAMP IRON PROTECTION"
Never Before Possible!

The rugged ERIEZ Grate Magnet removes tramp iron from free flowing materials when installed in hoppers, floor openings, vertical closed chutes, etc.

ERIEZ Grate Magnets are available in 162 sizes, from 2½"x4" to 36½"x36". Here's protection to valuable equipment and a great help in preventing product contamination. Stops fires and explosions . . . tramp iron can't get by!

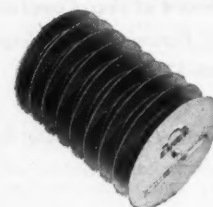
Look At These Features . . .

- Cadmium plated, hot oiled steel grill protects the magnets, slows and directs material stream onto all of the powerful magnetic tubes.
- Fast and easily cleaned . . . grill lifts off for easy access to smooth magnetic tubes.
- All sizes can be furnished entirely of stainless steel.
- Installation is fast and simple . . . no cutting or bolting necessary.

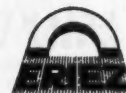
and a Companion

NEW . . . LOW COST . . . PERMANENT HOPPER MAGNET

ADAPTABLE FOR INSTANT INSTALLATION IN MOST ANY SIZE SLOPE-SHAPED HOPPER/



The new ERIEZ Hopper Magnet affords needed protection never before available! Circle design of the unit makes it the simplest of all magnetic installations . . . merely lay it in the throat of any hopper, and while in this position it will grab and hold tramp iron from the free flowing material which passes through it! Constructed in 1" increments, the units can be had in any width.



Send for free bulletin B-204 fully describing these two new magnetic products.

MANUFACTURING COMPANY

13 Magnet Drive • Erie, Pennsylvania

"Buy Permanent Protection . . . by Eriez"

When inquiring check CP 3489 on handy form, pgs. 2-3

for
fast, accurate
SURFACE
AND
INTERFACIAL
measurements

CENCO-du NOUY®
Tensiometer

This apparatus employs the ring method for precise determination of both surface and interfacial tensions to values reproducible within plus or minus 0.05 dyne. Its operation is exceedingly simple and a complete determination can be made in from 15 to 30 seconds. Readings are direct from the scale without mathematical calculations.

The Cenco-du Nouy Tensiometer is a precision instrument, carefully and ruggedly built for long, dependable service. There are two types available.

No. 70535, for measurement of surface tensions and all interfacial tensions by upward pull of ring, complete with No. 70541A Torsion Wire; No. 70537 Platinum-Iridium Ring, 6 cm; olive green enameled case and directions . . . each \$193.95

No. 70545 (illustrated), for measurement of forces required to break liquid interfaces by both upward and downward movement of ring. Completely assembled with No. 70541A Torsion Wire; No. 70542 Platinum-Iridium Ring, 6 cm; olive green enameled case and directions . . . each \$282.15

Our Bulletin No. 102 "Surface Phenomena," contains full details about this equipment. Write for your free copy today.

cenco
.....

... one dependable source of supply for everything you need in scientific instruments and laboratory supplies. Over 15,000 items . . . 14 branch offices and warehouses.

CENTRAL SCIENTIFIC COMPANY
1700 IRVING PARK ROAD • CHICAGO 13, ILLINOIS
CHICAGO NEWARK BOSTON WASHINGTON DETROIT SAN FRANCISCO
SANTA CLARA LOS ANGELES TORONTO MONTREAL VANCOUVER OTTAWA
REFINERY SUPPLY COMPANY
621 EAST FOURTH STREET • TULSA 3, OKLAHOMA
2215 MCKINNEY AVENUE • HOUSTON 3, TEXAS

When inquiring check CP 3490 on handy form, pgs. 2-3



Direct reading
without mathematical
calculations

Models available for
surface and interfacial
measurements

Minimum amount of
liquid required

Only method practical
for colloidal
solutions

for the
laboratory

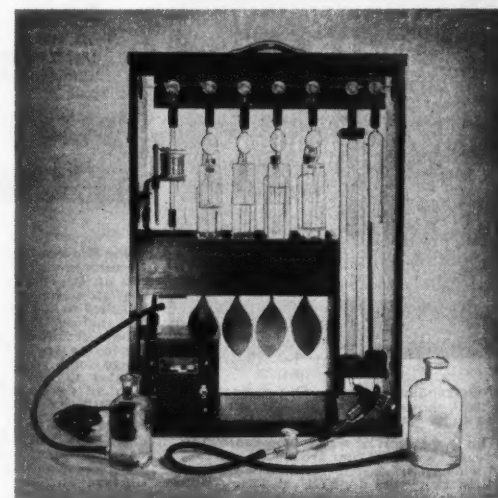
**Orsat gas analysis apparatus
eliminates explosion hazards
and valve difficulties**

design of the absorption
pipets and combustion sys-
tem has been modified

Uses: For the analysis of fuel and flue gases.

Features: Redesigned absorption pipets are claimed to be always in order, consistent in behavior, insensitive to variation of rates of flow, capable of accommodating very fast transfer rates, easily cleaned and durable. Combustion system provides efficient and rapid combustion without the danger of burning out the element.

Description: A mechanically positive Orsat-type unit, the Sargent Gas Analyser, secures rapid absorption by use of the Sargent valveless automatic bubbling Pyrex-brand glass pipet in each of



Combines safety and speed for gas analysis work

the 4 absorbing positions. By utilizing an automatic switching arrangement which involves no moving parts, this pipet imposes no limit on the speed at which the gas may be passed in or out, thus reducing cycle time as well as losses from operating errors.

The combustion system which is employed in the unit combines complete safety with the convenience of the Drehschmidt capillary method. It com-

pletely eliminates the presence of explosive mixtures in potentially hazardous quantities. The combustion tube is a modification of the Drehschmidt capillary, comprising simply a quartz capillary with platinum catalyst, durable, easily replaceable and requiring no maintenance.

(Gas analysis apparatus is a product of E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. . . . check CP 3491, pages 2 and 3.)

Electrophoresis-diffusion apparatus uses same light path twice for increased sensitivity . . .

optical arrangement permits use of 5 techniques
Uses: Observing and recording boundaries.

Features: Optics are arranged to provide versatility in observation and recording of boundaries by five optical techniques: (1) Ordinary schlieren, (2) Cylindrical-lens schlieren, (3) Rayleigh interference fringes, (4) Gouy fringes, and (5) mechanical scanning. Schlieren and Rayleigh patterns can be recorded simultaneously so that the rapid and accurate fringe-counting technique can be used in evaluating concentrations.



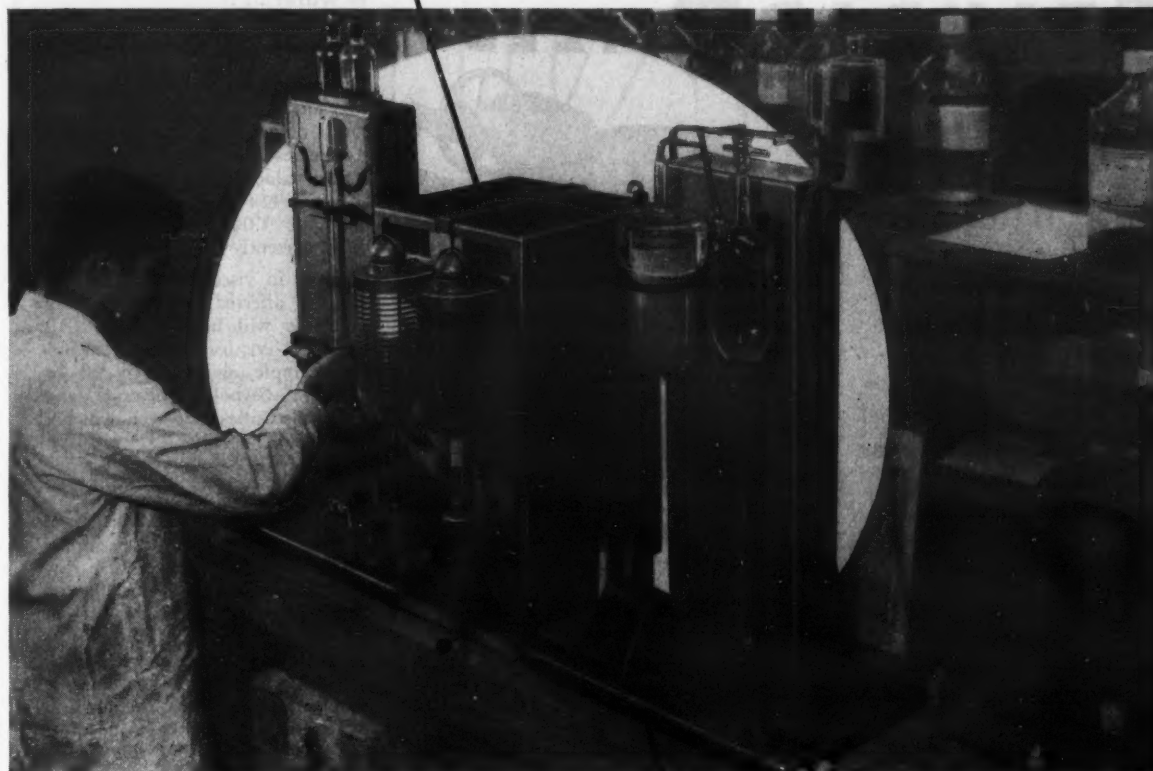
Allows use of five different optical techniques

Description: Based on a folded, figure-4 optical system, with an 18 ft optical path, the Spinco Model H Electrophoresis-Diffusion Instrument achieves double sensitivity by directing light through the cell and specimen twice. In addition to compactness, design gives accessibility of operating controls and optical elements from the observation and recording position.

Housed in a single laboratory cabinet with dimensions 98 x 30 x 48", the apparatus includes a servo-controlled cell turret capable of carrying three individual cell assemblies, each of which is continuously connected to an individually-regulated and calibrated power supply. Any cell assembly can be rotated into position for observation.

(Product of Specialized Instruments Corp., Dept. CP, 629 O'Neill Ave., Belmont, Calif. . . . check CP 3492 on handy form, pages 2 and 3.)

SAM TOUR & COMPANY, INC. USES



LINDBERG HIGH FREQUENCY COMBUSTION UNIT

In New York City, a Lindberg two-station High Frequency Combustion Unit . . . along with a Lindberg Volumetric Carbon Determinator and a Lindberg Sulfur Determinator is used in varied types of ferrous analyses by Sam Tour & Company, Inc., one of the nation's leading commercial testing laboratories.

Hundreds of laboratories . . . commercial and private . . . have installed Lindberg High Frequency Combustion units for the ignition of iron-steel samples in carbon and sulfur determinations.

Here are some of the reasons why you will select Lindberg equipment:

- Both carbon and sulfur can be analyzed with the same unit.
- Lindberg "HF" combustion units are ready for instant use; preliminary warm-up, only once a day, requires 57 seconds.
- They take only a small fraction of the power required by resistance element furnaces.
- "Vycor" glass combustion tube permits easy visibility of operation . . . costs only one-half as much . . . lasts many times longer than the old, conventional furnace tubes.
- Only samples are heated . . . no excess heat in laboratory . . . no elements to burn out.

For additional information call your nearest laboratory equipment dealer . . . or write for bulletin #1000.

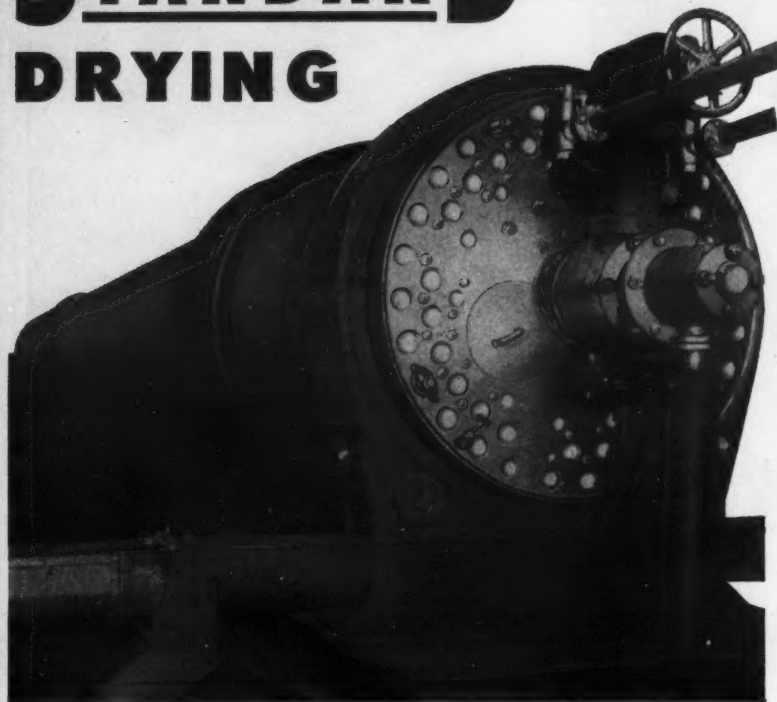
**Leading Laboratories Like
LINDBERG LABORATORY EQUIPMENT**

LINDBERG LABORATORY EQUIPMENT

Laboratory Division, Lindberg Engineering Company, 2480 West Hubbard Street, Chicago 12, Illinois

When inquiring check CP 3493 on handy form, pgs. 2-3

HOW THE HURON MILLING COMPANY obtains
"Cleanliness and Economy" through
STANDARD-IZED
DRYING



**STANDARD-HERSEY dryer does work of
 16 pairs of hot rolls...**

In operation at the Huron Milling Company, Harbor Beach, Michigan, one Standard-Hersey dryer proves that it pays to Standard-ize. Here's what they say about their Standard-Hersey dryer. "What used to be a messy operation is now fully up to high standards expected for a food product. Probably the largest saving is effected in reducing the manpower to operate the equipment—whereas we used to have two men in a shift, a single operator now takes care of our rotary dryers."

Why not let the time-tested Standard-Hersey methods solve your drying problems—and save you money too? There are more than 30 types of Standard-Hersey dryers to suit any need—anywhere.



Write today for the free 12 page bulletin
 on Standard-Hersey Dryers—No. 531.



STANDARD STEEL CORPORATION
 5083 Boyle Ave., Los Angeles 58 7 E. 42nd St., New York 83

When inquiring check CP 3494 on handy form, pgs. 2-3

FOR THE LABORATORY

**NBS adopts new value
 for the viscosity
 of water...**

kinematic value at 68°F will
 be 1.0038 cs

The National Bureau of Standards will adopt a new value for the viscosity of water on July 1, 1953. As the result of a research project, a new value of 1.0038 centistokes at 68°F has been established in place of 1.0070 centistokes, the value currently in use.

Changes in viscosity measurements will be affected and changes in standards will be necessary. All kinematic viscosity measurements, for example, will be reduced by 0.318%. Saybolt Universal and Furol Viscosities, however, will not be affected.

All kinematic viscometers in use will require restandardization or recalibration. Instruments which have C-constants that are not simple numbers (0.1, 0.3, 0.5, etc.) may be restandardized or recalibrated merely by multiplying their present factors by 0.99862. However, a more complicated procedure will be required where the C-constants are simple numbers, since the physical dimensions control the value of C and any one or all of the dimensions may have to be adjusted, if it is desired to retain the simple number C-constant.

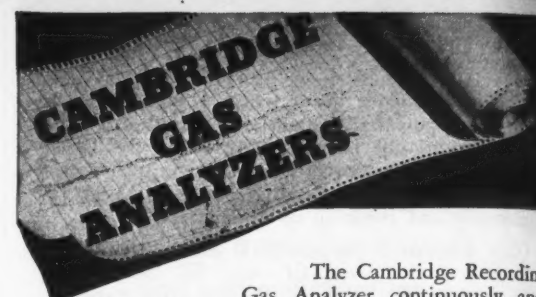
(Information received from the American Society for Testing Materials, Dept. CP, 1916 Race St., Philadelphia 3, Pa.)

**Bath covers range
 from room temp
 to 60°C**

Uses: Recommended as an economical means of establishing a constant temperature reservoir for lab work where extremely rigid limits of temperature control are not required.

Features: Provides temperature regulation to plus or minus 0.25°C with a minimum of equipment.

Description: The Sargent Water Bath incorporates a basic heat control circuit comprising a dial-adjusted linear expansion thermoregulator. This unit acts as a temperature sensitive switch for a magnetic relay, which in turn energizes a 300-w cartridge-type heater as required to maintain



The Cambridge Recording Gas Analyzer continuously analyzes and records as many as six constituents of a gas. Eliminates intermittent, slow and expensive manual gas analysis. Accurate... Sensitive... Simple. No moving parts; utilizes thermal conductivity principle.

Makes possible substantial savings in the operation of kilns, production of inert gases, and in metallurgical, petroleum, and other chemical processes. Single- and Multi-point instruments are available for a wide variety of applications.

Send for literature mentioning application

CAMBRIDGE

INSTRUMENT COMPANY, INC.

3706 Grand Central Terminal, New York 17

Pioneer Manufacturers of

PRECISION INSTRUMENTS

When inquiring check CP 3495 on handy form, pgs. 2-3

Work with solvents? putty? molten metal?

TEST • STUDY • CONTROL
VISCOSITY
 As Simply, Quickly and Easily
 as Taking Temperature Readings

WITH A
Brookfield
 SYNCHRO-LECTRIC
VISCOMETER

Adaptable to any problem from less than one to 32,000,000 centipoises. Send for illustrated catalog.

Just a flick of a switch, then read the Brookfield dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, takes only a minute or two.

Available in a variety of models suitable for extremely accurate work with both Newtonian and non-Newtonian materials, Brookfield Viscometers are portable and plug in any A.C. outlet. Write today.

A well-known laboratory reports: "Our Brookfield Viscometer has been valuable for determining thixotropic behavior and has made possible more accurate viscosity determinations in solutions of high solids and/or high temperatures."
 Write Dept. A., Stoughton, Mass.

BROOKFIELD ENGINEERING LABORATORIES, INC.

When inquiring check CP 3496 on handy form, pgs. 2-3

CHEMICAL PROCESSING

READ AIR VELOCITIES instantly... accurately... anywhere...

...WITH THE **ALNOR VELOMETER**



Alnor Velometer, a precision-built, self-contained, portable instrument, gives you instant, accurate readings of air velocities anywhere—in plants, mines, mills or laboratories. Measures speed of air flow through ducts, grilles, furnaces, spray booths or in the open. This rugged instrument needs no special care or delicate handling—anyone can use it and get accurate readings. Needs no calculations or reference charts. Available in a wide variety of scale ranges, and with a full assortment of jets and fittings for every application. You'll want full details and prices, so write for Bulletin 2448-G, Illinois Testing Laboratories, Inc., Room 504, 420 No. La Salle St., Chicago 10, Ill.

Alnor PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

When inquiring check CP 3497 on handy form, pgs. 2-3

5 mm to 10 Microns ...or Better!

There's a Beach-Russ Rotary Vacuum Pump to meet your requirements in dry or wet operations.

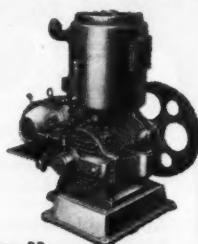
Faster Pump-down... Longer Service

With the superior mechanical efficiency of Beach-Russ Type SS or Type RP Pumps, you get down to your working vacuum faster...and gain all the advantages of long service life with minimum maintenance costs.

Are You on the "Much Ado About Nothing" Mailing List?

If you do not get this regularly issued, highly informative house organ on high vacuum and its uses, just ask us to put your name on the mailing list.

Type SS...
for vacuum up to 5mm on tight
systems, for dry or semi-wet
work. Capacities 6 to 375 c.f.m.



Type RP...
for vacuum up to 10 microns
or better on dry or wet work.
Capacities 17 to 845 c.f.m.

BEACH-RUSS COMPANY
46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 3498 on handy form, pgs. 2-3

FOR THE LABORATORY

constant temperature. Circulation of water in the reservoir is effected by a motor-driven propeller.

The circulating and heat control systems are compactly enclosed in a cast metal housing which is supported on the rim of a 12 x 12" Pyrex-brand glass reservoir. Provision is made for mounting a thermometer in the case.

(Product of E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. . . . or for more information check CP 3499 on handy form, pages 2 and 3.)

Analyzes for solids in boiler water

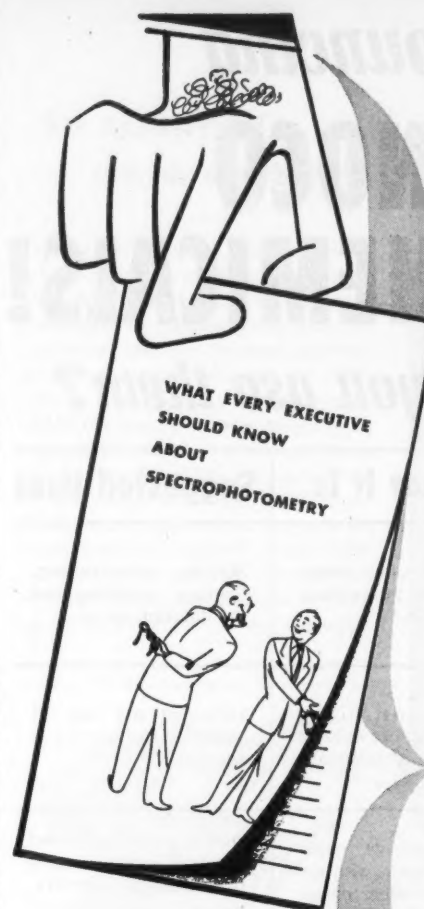
A method said to be comparable in accuracy and simplicity to the conductometric method has been developed for the analysis of solids in boiler water. Two procedures may be used depending on the degree of accuracy desired. With the "dropper" test, which can be made in 2 min, results are reproducible to 200 ppm. The more precise "buret" test requires about 3 min and gives results reproducible to within 25 to 50 ppm.

(Complete dropper and buret test units, with enough reagents for about 100 tests, are available through Hagan Corp., Dept. CP, PO Box 1346, Pittsburgh 30, Pa. . . . or for more information check CP 3500 on handy form, pages 2 and 3.)

Describes applications of ultrasonics

Factual, 16-page bulletin reviews a number of possible applications and describes effects of ultrasonics. Common properties of ultrasonics together with the degassing, emulsifying, dispersing, chemical, extracting, fog generating, coagulating and germ-killing effects of this form of energy are described in detail. Several laboratory-scale units for production of the type of effect are outlined.

Bulletin dealing with ultrasonics is available from Electrovert Ltd., 265 Craig St. West, Montreal 1, Canada. When inquiring specify CP 3501 on handy Reader Service slip between pages 2 and 3.



FREE... This helpful new booklet on modern Spectrophotometry

By means of a great new science—Spectrophotometry—laborious, time-wasting analytical procedures are rapidly being replaced with faster, simpler methods of chemical analysis and control.

This booklet, complete with color charts and illustrations, provides for the first time a basic summary of the important facts to know about the interesting subject of Spectrophotometry . . .

► It explains the principles of Spectrophotometry—how light beams are used to simplify the various types of chemical analyses.

► It shows typical absorption spectra and how they are used to quickly identify the individual chemicals and chemical compounds.

► It tells what to look for in a Spectrophotometer and why . . . the importance of adjustable band widths—wide wavelength range—and how to be sure of maximum versatility in the equipment you select.

► It outlines typical money- and time-saving applications for modern Spectrophotometric equipment, ranging from medical laboratories to bottle-making machines . . . synthetic rubber plants to food processing operations . . . paint making to criminal investigations.

Get your free copy

of this helpful new Beckman booklet now from your nearest authorized Beckman Instrument dealer. Or write for Data File 23-11.

BECKMAN INSTRUMENTS, INC.

SOUTH PASADENA 1, CALIFORNIA

When inquiring check CP 3502 on handy form, pgs. 2-3

Announcing SUNOCO PETROCHEMICALS!

Where can you use them?

Product	What it is	Suggested Uses
Sulfonate WS	A low-cost water soluble petroleum sulfonate.	Wetting, air-entraining, foaming, rewetting and ore flotation agent.
Sulfonate OS	A low-cost, highly purified oil soluble petroleum sulfonate.	Detergent and lube oil additives. Surface active agent.
Sunaptic Acids	High mol. wt. naphthenic acids, with unusually low percentage of unsaponifiables.	Driers, emulsifying and flotation agents. Used in preparation of esters, plasticizers and preservatives.
PDO-40	A polymerized, closed-chain hydrocarbon. Dries at room temperature; resists water, alkalies, dilute acids; good color stability; soluble in mineral spirits.	Corrosion resistant surface coatings, metal primers, aluminum bronze vehicle, concrete curing compounds, core oils, and reclaiming agent for rubber.
Propylene Trimer and Tetramer	Commercial grade C ₉ and C ₁₂ mono-olefins.	Synthetic detergents and chemical intermediates.

A Sun representative will gladly discuss these new Sunoco Petrochemicals with you. Or you can get technical data and samples for test purposes. Write SUN OIL COMPANY, Phila. 3, Pa., Dept. CP-9

**INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY**



PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL

When inquiring check CP 3503 on handy form, pgs. 2-3

FOR THE LABORATORY

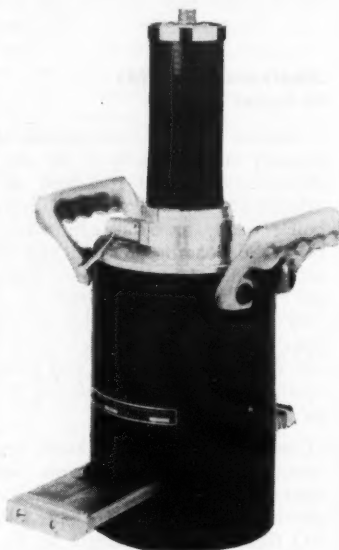
Uses 1 1/2 inches of lead to surround counter and sample . . .

takes planchets up to 1/4" deep and 2" in diameter

Uses: Designed especially for scintillation counting of planchets.

Features: Two-position slide automatically centers planchet recesses under counter.

Description: The Model LH-3 lead shield incorporates a quick acting clamp at top of safe which



Facilitates scintillation counting operations

allows counter to be held at any depth up to 8". Clamp is bored to specification, allowing safe to be used with any scintillation counter whose diameter is between 2 3/8 and 2 5/8".

(Available from Nuclear Research and Development, Inc., Dept. CP, 6425 Etzel Ave., St. Louis 14, Mo. . . . or for more information check CP 3504 on handy form, pages 2 and 3.)

Simple, rapid method for tensile testing

Uses: Routine production and quality control work in the plant; also provides an accurate and flexible instrument for the research laboratory.

Features: Hydraulic system provides constant rates of elongation that are infinitely adjustable on a

DELTRAC Resiment

the Furane Resin Cement that

• **RESISTS CORROSION -**
Acids, Alkalies, Solvents

• **SETS PERFECTLY -**
Summer or Winter

• **WITHSTANDS HEAT -**
Temperatures up to 375° F.

Highly efficient as a mortar for corrosion-resistant masonry, Resiment is low in porosity and high in compressive and tensile strength. It is supplied in the form of powder and liquid, in proper combinations, for mixing at time of use. Sets quickly by internal chemical reaction.

Write for Folder and Prices

DELTRAC CORPORATION
135 Mill St. Watertown, N. Y.

When inquiring check CP 3505 on handy form, pgs. 2-3

BOOST PUMPS

High Pressures

Low Prices

Measures 8 1/4" wide x 9 3/8" deep.

Boost 100 PSI. air pressure to 10,000 PSI, fluid pressure for \$173.25 (FOB Gardena, Calif.). Eight standard models for output fluid pressures of 1,000 to 30,000 PSI. Special models for lower or higher pressures.

Applicable wherever low volume output at high pressures is the requirement. For oil or water service. Complete power packages also available. Send for bulletins.

SPRAGUE
Engineering and Sales Corp.
1144 West 135th Street, Gardena, California

When inquiring check CP 3506 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR YOUR Processing Operation

We can supply all or any part of your filtering, mixing, storing and filling equipment.

- MIXING AND STORAGE TANKS
- PORTABLE AGITATORS
- FILTER MEDIA
- FILTERS
- STAINLESS STEEL MEAS.
- URES, PAILS, Etc.
- FILLERS
- TUBING
- PUMPS
- FITTINGS
- CONVEYORS, Etc.

We invite your inquiries.

FILPACO INDUSTRIES
The FILTER PAPER CO.
2432 S. Michigan Ave., Chicago 16, Ill.

When inquiring check CP 3507 on handy form, pgs. 2-3

FOR THE LABORATORY

throttle dial. No gear changing is required.

Description: The Model 49RC Tensile Tester has a rigid cross-head and uses strain gages for load measurements. Drive system has low inertia and performs without overshoot at high speeds. Automatic cycling between extension and/or load limits is available. Return speed can be adjusted independently of the pulling speed.

Full scale load ranges from 5 gm to 5000 lb are available; rates of extension from 0.1 to 20 inches per min are standard. Special ranges from 0.2 to 250 inches per minute have been provided.

Electronic recorder and controls are in a separate cabinet that can be moved about with respect to the testing unit.

(Product of Thwing-Albert Instrument Co., Dept. CP, Penn St. at Pulaski Ave., Philadelphia 44, Pa. . . or for more information check CP 3509 on handy form, pages 2 and 3.)

Useful for detecting strains in glass and plastics . . .

hand polariscope convenient for lab and production use

Uses: For the detection of strains in chemical glassware, clear plastics, and glass to metal seals. May also be employed in the determination of crystal axes.

Features: Convenient size makes unit useful for laboratory and/or production use.

Description: The Model 242.3 Hand Polariscope is made with an oxidized non-rusting metal frame. The polarizer is fixed in one end of the frame. The analyzer is rotatable through 180° in the other end of the frame. There is a 3 1/4" space between ends for the object under examination. Any source of moderate intensity light is sufficient for the detection of strains in glass and clear plastic, and the quick inspection of glass molds and seals. The filters are made of 3" scratch-resistant Polaroid.

(Manufactured by Pacific Transducer Corp., Dept. CP, 11921 W. Pico Blvd., Los Angeles 64, Calif. . . or for more information check CP 3510 on handy form, pages 2 and 3.)

to simplify data analysis...

A SPECIAL PURPOSE DEVICE . . . designed-developed by LIBRASCOPE for a specific computing need—the simplification of flow chart data reduction of graphic panel strip chart recorders by square root extraction and integration. The Square Root Planimeter was designed and developed by LIBRASCOPE as a special purpose device for industry. LIBRASCOPE offers this service for your application—perhaps the solution of problems confronting you in simplification of Data Analysis. For information concerning this or other special purpose devices, or assistance in solving your particular computing-controlling problems, consult LIBRASCOPE, manufacturer and designer of mechanical and electrical analog computers, digital computers, input-output devices, controls and components.

FLOW CHART TOTALIZING OF COST ACCOUNTING DATA AT THE STANDARD OIL COMPANY, EL SEGUNDO, CALIF.

THE SQUARE ROOT PLANIMETER

Flow chart totalizing of miniature panel strip chart recorders manufactured by Brown Instruments, Moore Products, The Swartwout Company, Taylor Instrument Company, and others. A true square root extraction and integration without approximation. Also available for linear integration. Accuracy comparable to stability of chart paper.

LIBRASCOPE

1607 FLOWER STREET • GLENDALE, CALIFORNIA

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

Computers and Controls

If you desire the challenge of advanced design fields and qualify in education and experience, write to Dick Hastings, Personnel Director.

When inquiring check CP 3511 on handy form, pgs. 2-3

Hot Water

- * SAFELY
- * ABUNDANTLY
- * DEPENDABLY
- * ECONOMICALLY

This compact, modern "package" heater will furnish heated water abundantly and economically with exceptional uniformity of temperature.

It is delivered completely assembled, adjusted, tested and ready to install by merely attaching water and steam pipes.

Water for washrooms and showers is delivered at the uni-

form, safe, regulated temperature of 120° F.

Or, water for scalding purposes can be drawn directly from the tank simultaneously at 160° to 180° F.

Hundreds are in use and highly satisfactory performance has brought many repeat orders.

For better hot water service than you have yet experienced, write for our illustrated bulletin.

THE SAFETY WATER HEATER
THE COE MANUFACTURING COMPANY
503 BANK ST. PAINESVILLE, OHIO

When inquiring check CP 3508 on handy form, pgs. 2-3

TO THE INGENUOUS

Not familiar with this

NEW INDUSTRIAL TOOL

Free Sample of Fullergript Brush Strip

What problems can you solve by adapting Fullergript to your equipment?

This brush strip can be coiled or twisted into numerous shapes. It can be formed to give intermittent or continuous brushing action. It adapts to stationary or power driven applications. How it may help you is a matter of your own



Splash Guard on Vertical Grinder



Recovering 1000 Pounds of Raw Wool Each Week from Sewer

ingenuity — plus the services of the Fuller Brush Engineering Dept. Find out what Fullergript can do by sending for a sample strip. We will also send a booklet showing its versatility. Simply write us.



3656 MAIN STREET • HARTFORD 2, CONN.

Power driven brushes, Factory & Institutional cleaning tools, Waxes & Detergents

SIMPLY MAIL TODAY

THE FULLER BRUSH CO., INDUSTRIAL DIV.
3656 Main St., Hartford 2, Conn.

Please send me without cost or obligation a short strip of Fullergript — and tell me how it cuts costs when used as a machine component.

Name _____
Company _____ Title _____
Street _____ City _____ State _____

When inquiring check CP 3512 on handy form, pgs. 2-3

FOR THE LABORATORY

Plastic case is designed to carry and protect small items . . .

has potential application in portable test kits
Uses: Intended as a portable test kit, unit has a construction which is adaptable to any sort of container, whether portable or not, in which many articles must be held securely and be clearly visible.

Features: The plastic case actually weighs less than half of a metal one of the same dimensions. Every item is immediately visible — no double tiers, only a single layer.

Description: The kit contains space for 48 glass reagent bottles, a rack with 14 miniature test tubes, a hand pump, boxes of filter paper and other accessories. These items occupy appropriate positions in a plastic liner, fabricated from a rubber-resin copolymer having 3 times the strength weight ratio of steel.

A second liner of the same material is positioned in the other half of the case and acts to complete the "closure" of each item — holding them in place firmly when the lid is down. Several sponge rubber pads supplement the recesses in the second liner to make a snug fit for the packaged units in the kit.

The entire shell of the case is fabricated of the same rubber-resin copolymer; it is press-formed into shape, with integrally molded-in ribs to give the case greater shock resistance. Case dimensions are $26\frac{3}{4} \times 12\frac{3}{4} \times 4\frac{1}{2}$ ". Fully loaded, the unit will weigh approximately 21 lb.

(Manufactured by Bassons Industries Corp., Dept. CP, 1432 West Farms Rd., New York 60, N. Y. . . . check CP 3513 on form, pages 2 and 3.)

Gives spectrophotometer a reliable source of outside power . . .

permits batteries to be installed outside of the spectrophotometer case for convenience

Uses: Provides a steady, reliable outside power source for the Beckman DU Spectrophotometer.

Features: The C-batteries of the instrument can now be installed, adjusted and replaced without disassembling the unit.

Description: A modification of manufacturer's previous model, the Fisher Power Supply is designed to accommodate the six $7\frac{1}{2}$ -volt dry cells which are normally placed inside the case of the spectrophotometer. A seventh battery is furnished to take part of the load formerly carried by the No. 2 dry cell, thus lengthening the service life of the DU power system.

When the instrument is not in use, power supply acts as a "trickle charger" to keep the battery at full charge (but never overloaded).

(Product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 3514, pages 2 and 3.)

"DEL" DESCO SAYS
YOU CAN BE A
RIP VAN WINKLE



. . . if your plug valves have
Delta Automatic Lubricators.

Lubricates the valve, automatically, every time it is opened and closed.

It will lubricate the valve 50 to 80 times before reservoir needs recharging, and this only takes a couple of minutes.

Ideal for frequently opened valves on such locations as LOADING RACKS, MANIFOLDS, LPG SYSTEMS.

It fits all lubricated plug valves.

It is a simple, fool-proof, low priced device that has proven to be a definite valve saver.

The DELTA High Pressure GUN



Develops 10,000 lbs. pressure. Barrel tested to 30,000 lbs. Fast, positive prime, handles heaviest lubricants.

Get this CATALOG

Complete information on all Delta Plug Valve Lubrication Equipment and Desco Lubricants.



DELTA ENGINEERING SALES CO.
802 Louisiana Ave. — Shreveport, La.

Sales Offices in All Principal Cities

DELTA

Plug Valve LUBRICATION EQUIPMENT

Fittings — Guns — Lubricants
Automatic Lubricators

When inquiring check CP 3515 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

**Large capacity oven
dries under vacuum
or atm pressure . . .**

useful at temps to 125°C

Uses: Dual purpose unit can be used for drying under vacuum or standard atmospheric conditions at temperatures up to 125°C.

Features: Large capacity with 100% visibility of drying chamber and 228 sq in shelf area.



Dual purpose oven is suitable for drying under vacuum or atmospheric pressure

Description: The Labline Duo-Vac Oven incorporates a one-piece seamless drawn aluminum vacuum chamber — 11" in diameter by 12" deep. Two shelves — 11 x 12" and 8 x 12" — are made of heavy gage perforated aluminum.

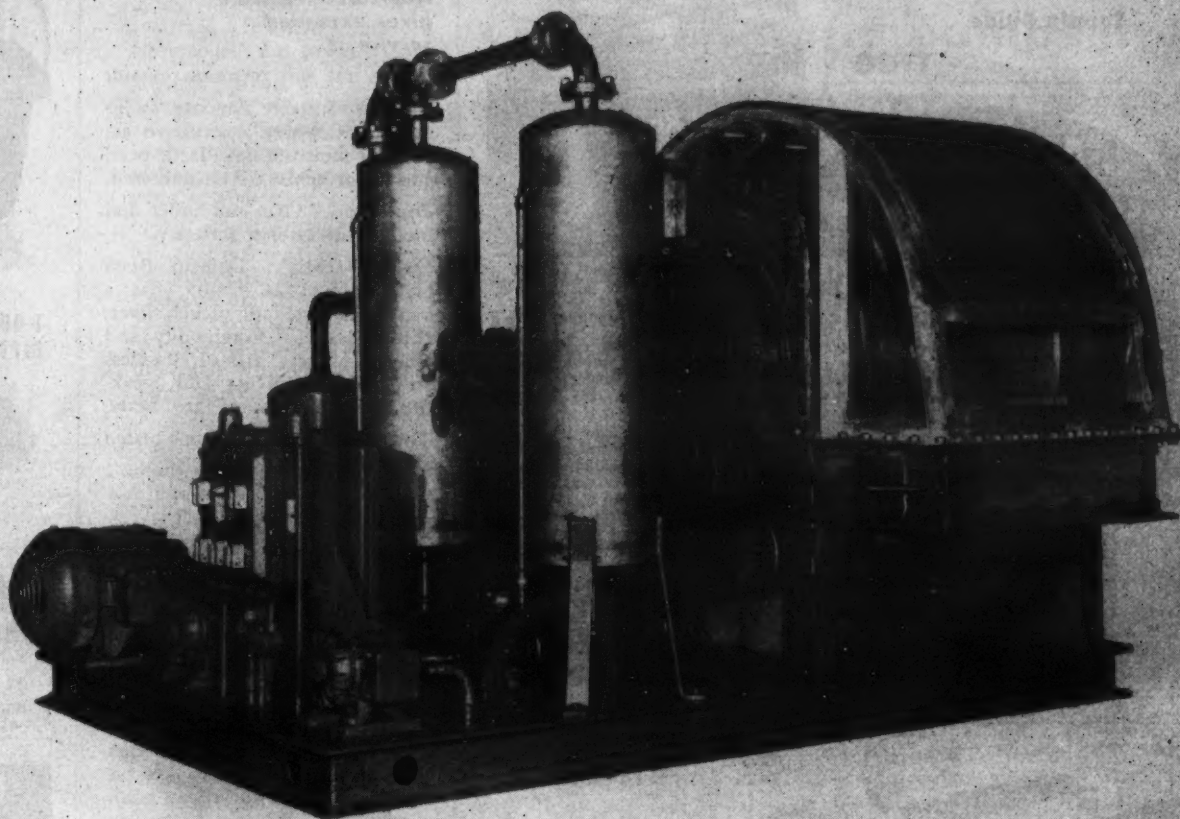
Thermo-wall type of heat eliminates all internal heaters. Heats from room to 100° Centigrade in one-half hour.

Unit has safety screen over glass window. Glass has an 8:1 factor of safety and will withstand 400°F thermal shock with 30,000 psi modulus of rupture.

(Product of Labline, Inc., Dept. CP, 217-221 N. Desplaines St., Chicago 6, Ill. . . . or for more information check CP 3516 on handy Reader Service slip between pages two and three.)

For more information on product at right, specify CP 3517 . . . see information request blank between pages 2 - 3.

Eimco Pilot Filter Stations Give Accurate Data



The machine pictured above is another example of Eimco custom filter design and construction. The filter is installed in one of the country's large pharmaceutical plants producing antibiotics and the construction incorporates Eimco's popular package unit design.

The filter unit is a 4 foot diameter by 2 foot face size — of all type 316 stainless steel materials with multiple cake washing apparatus, vapor tight hood, roller discharge and other features. The filter with all of its accessories is mounted on a single platform with all piping and valves connected, all electrical wiring

from motors to a central control panel. The unit arrives at the user's plant ready to run.

When your problem involves filtration consult an Eimco engineer first. Our more than half a century of service to the process industries gives us the necessary background to specify and build the proper equipment to do the best job for you at least expense.

Eimco manufactures all types of filtration equipment — our purpose is to suit the best type to your needs whether it be pressure, vacuum, gravity or any combination of these types.

You can't beat an Eimco

EIMCO

THE EIMCO CORPORATION

The World's Leading Manufacturer of Vacuum Filtration Equipment
EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:
NEW YORK, 51-52 SOUTH STREET • CHICAGO, 3319 SOUTH WALLACE STREET
BIRMINGHAM, ALA., 3180 PAYETTE AVE. • DULUTH, MINN., 216 E. SUPERIOR ST.
EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIF., 637 CEDAR STREET
KELLOGG, IDAHO, 307 DIVISION ST. • LONDON, W. 1, ENGLAND, 190 PICCADILLY

IN FRANCE SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND EIMCO (GREAT BRITAIN) LTD, LEEDS 12, ENGLAND
IN ITALY EIMCO ITALIA S.P.A. MILAN, ITALY

the most widely
used Electronic
Supply Guide

free
send for it

ALLIED'S COMPLETE 268-PAGE 1954 CATALOG

We specialize in
Electronic
Equipment
for Research,
Development,
Maintenance
and Production
Operations

COMPLETE EXPERT
Industrial Service

One complete
dependable source
for everything
in electronics

the World's Largest Stocks of

ELECTRONIC SUPPLIES FOR INDUSTRY

Simplify the purchasing of all your electronic supplies and equipment. Send your orders to us at ALLIED—the reliable one-supply-source for all your electronic needs. Depend on us for quick shipment from the world's largest stocks of special-purpose electron tubes, test instruments, audio equipment, electronic parts (transformers, capacitors, controls, etc.) and accessories—everything for industrial and communications application. We make immediate shipment from complete quality lines that are always in stock. Send today for your FREE copy of the 1954 ALLIED Catalog—the complete up-to-date guide to the world's largest stocks of Electronic Supplies for Industrial and Broadcast use.

ALLIED RADIO CORP.

100 N. Western Ave., Dept. 72-J-3
Chicago 80, Illinois

SEND FOR
FREE
CATALOG

When inquiring check CP 3518 on handy form, pgs. 2-3



"Doodling"
A NEW LAB?
you need this new
catalog and planning guide

180 pages of valuable ideas, layouts, specifications...featuring the most modern laboratory furniture and equipment.

See how Metalab's exclusive sectional design gives you unlimited opportunity for "custom-building" your lab. Find out how you can satisfy your exact needs...without paying custom-made prices. It's the year's most valuable aid to laboratory planning. Don't miss it.



SECTIONAL LABORATORY FURNITURE AND EQUIPMENT by

METALAB Equipment Corp.

230 DUFFY AVE., HICKSVILLE, L. I., N. Y.

WRITE
TODAY

on your company's
letterhead or coupon
stating your title
and firm's name.

Sales engineers
in principal cities

METALAB EQUIPMENT CORP., 230 DUFFY AVE., HICKSVILLE, L. I., N. Y.

Please send me without charge a copy of your new
180 page manual on laboratory planning.

☐ I am also interested in your free laboratory engineering and planning service.

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____ (Please print)

When inquiring check CP 3519 on handy form, pgs. 2-3

FOR THE LABORATORY

Non-corrosive scale
gives extended
service...

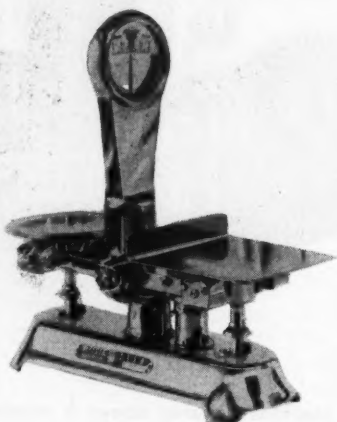
is rust and corrosion-resistant

Uses: Suitable for use under conditions where destructive actions of moisture, salt, lactic acid, and other acids are encountered.

Features: Over-and-under dial mechanism assures accuracy.

Description: Deteco Brass Scale, Model 1C-474-05, has a base constructed of nickel silver, chrome-plated. Commodity and weight platters are of stainless steel, as are pivots and working parts. Bearings are agate.

Tower is brass, chrome-plated and polished.



Corrosion-resistant scale useful in chemical industries and other fields where metal-destroying agents are handled

Slightest amount over or under the required weight is made immediately visible by the pointer moving off zero. Oil dashpot regulates and controls pointer movement.

Aluminum, etched dial is graduated to 1-oz by 1/8-oz.

(Product of Deteco Scales, Inc., Dept. CP, Park Ave. and Sanford St., Brooklyn 5, N. Y. . . . or for more information check CP 3520 on handy form, pages 2-3.)

Bulletin highlights laboratory ovens

Illustrated, 12-page bulletin describes several types of laboratory equipment, including ovens,

ACE-HIDE

UNBREAKABLE
RUBBER-PLASTIC
3-GAL. PAIL



3-GAL. PAIL



1-QUART
DIPPER

For handling corrosive solutions. Tough, resilient, practically indestructible. Made of a new synthetic rubber-base material called ACE-HIDE, unaffected by most acids and alkalis. Drip-proof spout pours easily directed stream. Graduated scale inside pail. ORDER NOW from your rubber goods distributor, or write us.

ACE rubber and
plastic products

AMERICAN HARD RUBBER COMPANY

93 Worth St., New York 13, N. Y.

When inquiring check CP 3521 on handy form, pgs. 2-3

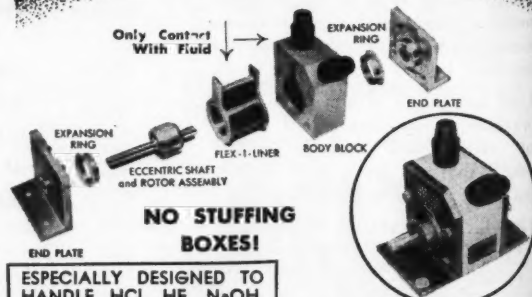
NEW POLYETHYLENE PUMPS NO GLANDS

PROBLEM

PUMPING
HIGHLY
CORROSIVE
FLUIDS
& ABRASIVE SLURRIES

SOLUTION

NON Corrosive
Contaminating
VANTON
Polyethylene & Phenolic
Flex-i-Liner
PUMPS



Only Contact
With Fluid

EXPANSION
RING

END PLATE

EXPANSION
RING

ECCENTRIC SHAFT
and ROTOR ASSEMBLY

FLEX-I-LINER

BODY BLOCK

NO STUFFING
BOXES!

ESPECIALLY DESIGNED TO
HANDLE HCl, HF, NaOH,
H₂SO₄, DISTILLED H₂O,
FeCl₃, Ca(OH)₂, and many
others

Fluid only contacts outer surface of
"FLEX-I-LINER" and inner surface of
body block. 35 combinations of rubber
and plastic "flex-i-liners" and pump
body blocks. Models available from fractional to 20 G.P.M. Vinyl and Compar "flex-i-liners" also available in pumps to 5 G.P.M. capacities. Widely used in chemical, food, pharmaceutical and other process industries—wherever non-contaminating pumping is required. Excellent for slurries. Write for literature.

VANTON PUMP CORP.

EMPIRE STATE BLDG., Dept. CP-9, New York 1, N. Y.

When inquiring check CP 3522 on handy form, pgs. 2-3

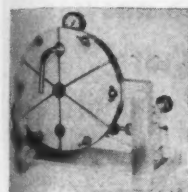
FLUID NEVER
TOUCHES METAL
NO GASKETS
NO VALVES
SELF LUBRICATING

CHEMICAL PROCESSING

Ertel Filters

FOR LABORATORY AND SMALL LOT PRODUCTION

Model 10 in either stainless steel, hard rubber, or brass, nickel or silver plated, to meet all laboratory filtration requirements, provides the versatility that ranks it "tops" in modern laboratories. Model E-1 is recommended for lab or batch filtration of 5 to 10 gallons. Model EBW is the smaller production unit that has solved hundreds of operations for extremely low initial investment.

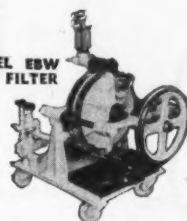


MODEL E-1
SINGLE DISK

MODEL No. 10
CYLINDER
TYPE



MODEL EBW
FILTER



Experience has proven that the great majority of filtration problems can be solved by our engineers with their seasoned background of filtration experience. What's your problem?

ERTEL ENGINEERING CORPORATION

KINGSTON 3, NEW YORK
Branch Office & Showroom Located in New York City
COMPLETE LINE OF

Liquid Handling Equipment



When inquiring check CP 3523 on handy form, pgs. 2-3

EVERY ARTICLE IN CHEMICAL PROCESSING IS "STAFF WRITTEN"

Every article in CHEMICAL PROCESSING is terse, brief, to-the-point . . . yet packed with essential facts of developments important to every man in chemical processing.

For every article is "Staff Written." Our Editors dig out the vital news-facts, then write them in the fewest possible words. That's why you read so much . . . keep up with developments . . . in short reading time. You don't have to "wade through" long, hard-to-read articles.

That's why you don't find these articles signed . . . every one is "Staff Written." It's the most difficult kind of editing, but it pays big dividends to every busy reader.

FOR THE LABORATORY

incubators, colorimeters, stills, analytical balances, furnaces, microscopes, and burets.

Separate sections deal with laboratory ovens which incorporate radiant wall heating, and polarizing microscopes. Numerous photographs show the various items of equipment.

"Laboratory Spotlight — Number 10" is issued by Harshaw Scientific, Div. of The Harshaw Chemical Co., Dept. CP, 1945 E. 97th St., Cleveland 6, Ohio. When inquiring specify CP 3524 on handy Reader Service slip, pages 2 and 3.

Convenient method for temp control

Uses: Can be used for all types of temperature control in water baths, constant temperature rooms, control circuits, etc.

Features: Has magnetic collar for adjusting temperatures between minus 10 and plus 110°C.

Description: The Labline Rota-Set Thermo-regulator incorporates an adjustable tungsten contact which moves when magnetic collar is turned. Unit contains mercury which is hermetically sealed under gas pressure. Graduated scale shows temp setting.

Overall length 14". Must be used with electronic relay to carry load. Maximum limiting current through regulator is 3 microamperes.

(Product of Labline, Inc., Dept. CP, 217-221 N. Desplaines St., Chicago 6, Ill. . . . or for more information check CP 3525 on handy form, pages 2 and 3.)

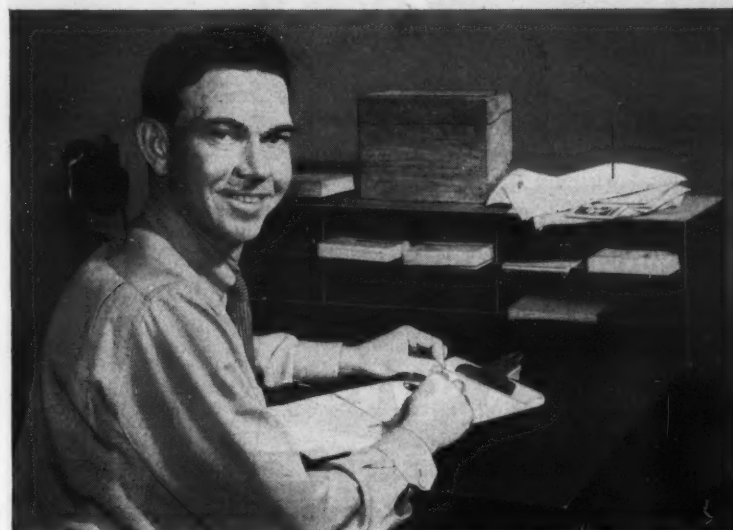
Illustrates polyethylene laboratory equipment

Graduated cylinders, beakers, bottles, wash bottles, tubing, carboys, funnels, and reagent bottles fabricated of polyethylene are described in an informative booklet dealing with laboratory equipment. Photographs show construction of units and tables list available capacities and dimensions.

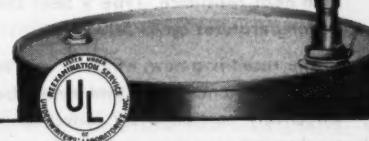
"Lanco Review," No. 4 is issued by Arthur S. LaPine and Co., Dept. CP, 6001 S. Knox Ave., Chicago 29, Ill. When inquiring specify CP 3526, pgs. 2 & 3.

Every day more and more factory men tell us —

Tokheim hand pumps are safer, faster, more useful!



This new Tokheim double-action hand pump has no equal for speedy, safe handling of liquids. Delivers 20 gallons per minute of most fluids. Stops wasteful dripping and slippery floors. Reduces fire hazard and accidents common to other methods of transfer. With optional diaphragm and body, it handles a wide variety of products. Compare list below with your own needs. UL-approved for petroleum liquids. Available in hose and spout models—for drums, skid tanks and underground installations. Call your dealer, your Tokheim representative, or write the factory for literature.



A Tokheim will
handle a
variety of liquids

Acetates • Alcohols • Aromatic & Chlorinated Solvents • Glycols • Ketones & Ethers • Petroleum Solvents • Plasticizers • Petroleum Products • Ammonia • Ammonia Hydroxide • Cutting Oils • Flushing Oils • Lacquer Thinners • Anti-Freezes • Castor oil • Caustic Soda Solution • Freon • Glycerine • Turpentine • Water • Wood & Vegetable Oils.

General Products Division
TOKHEIM OIL TANK AND PUMP COMPANY
DESIGNERS AND BUILDERS OF SUPERIOR EQUIPMENT SINCE 1901
1890 WABASH AVENUE, FORT WAYNE 1, INDIANA
Factory Branch: 1309 Howard Street, San Francisco 3, California

When inquiring check CP 3527 on handy form, pgs. 2-3

Here's the Seal
To Solve Your
Corrosion and
Temperature
Problems!

JOHN CRANE
MECHANICAL SEAL
WITH
TEFLON

The John Crane Type 9 Seal is designed to meet corrosive and high temperature conditions. That's because its flexible wedge and sealing rings are molded of the spectacular new plastic, Teflon, which is not affected by any industrial chemical, including solvents.

This revolutionary seal is the successful development of two years research and field testing. It's a perfect blend of John Crane experience in designing mechanical seals with the unique properties of Teflon: chemical inertness, extremely low friction and high heat resistance. Type 9 Seal can be employed at temperatures up to 500° F.

The result is a new, efficient way to handle corrosive liquids and gases that never before could be effectively controlled by conventional, flexible-type mechanical seals.

Prevents Leakage of:

EXPENSIVE CHEMICALS
INFLAMMABLE LIQUIDS
TOXIC GASES
CORROSIVE LIQUIDS
SOLVENTS

Other John Crane Teflon Products include expansion joints, C-V Rings, packings and gaskets. Also, parts molded or machined to your particular requirements.

Write today for New Booklet describing
the John Crane Type 9 Shaft Seal

*DuPont Trade-mark for tetrafluoroethylene resin

JOHN CRANE

CRANE PACKING COMPANY
1821 CUYLER AVE. • CHICAGO 13, ILLINOIS
Offices in All Principal Cities in United States and Canada

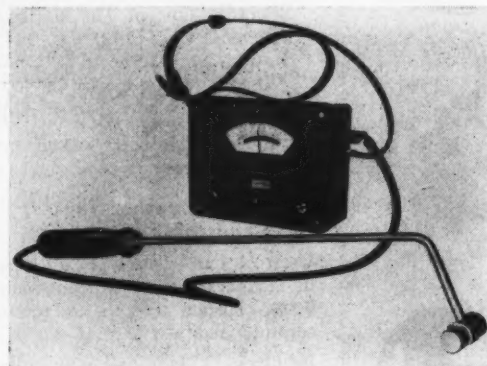


FOR THE LABORATORY

**Eliminates laboratory work
involved in determining
tin content of solder**

Uses: For quick analysis of the lead and tin content in solder for process control.

Features: Portable, direct reading indicator eliminates time-consuming laboratory work usually connected with determining the amount of tin in solder.



Permits quick analysis of solder for tin content

Description: Incorporating a direct reading indicator and an improved sensing unit, the Wheelco Tin Content Indicator shows the correct percentage of tin in the sample by measuring the difference in temperature at transformation point of the lead standard and lead-tin sample. Unit consists of an open sample cup and a sealed cup containing the lead sample.

(Manufactured by Wheelco Instruments Div., Barber-Colman Co., Dept. CP, Rockford, Ill. . . . or for more information check CP 3529 on handy form, pages 2 and 3.)

1465-page catalog describes laboratory apparatus

Designed for convenience and ready reference, comprehensive catalog gives carefully organized data and accurate illustrations for thousands of laboratory items used by chemists and allied technicians. Included in its contents are illustrations and detailed information concerning an entire line of scientific laboratory instruments, apparatus, supplies and reagent chemicals.

Catalog offers many features for reader convenience — permanent catalog numbers, durable binding, complete description of each item in only one place, complete indexing arrangement, description of all components of each item of equipment and catalog numbers to facilitate ordering of replacement parts, and a handy condensed index on the fly leaves.

Thousands of chemicals — inorganic, organic, and micro, amino acids, biological stains, culture media, indicators, standard solutions, minerals and

PLA-TANK DUCTS

are the answer
where
corrosion is a problem

PLA-TANK DUCTS

are manufactured from long-life resin-bonded glass fiber.

PLA-TANK DUCTS

are resistant to a wide variety of fumes.

PLA-TANK DUCTS

are resistant, inside and out, at temperatures from -60° F. to 280° F.

PLA-TANK DUCTS

are competitively priced with other corrosion-resistant materials.

PLA-TANK DUCTS

are available now in standard 6" - 34", as well as rectangular and custom-built shapes, including hoods.

PLA-TANK DUCTS

are the answer to your needs for many fume exhaust jobs now on your drawing boards — or for replacements in existing systems.

Write for free data file sheet

THE *Chemical* CORPORATION

63 Waltham Ave., Springfield 9, Mass.

When inquiring check CP 3530 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 3528 on handy form, pgs. 2-3

FOR THE LABORATORY

ores are alphabetically arranged in the special chemical reagents' section and are sub-classified according to purity. Where of interest, physical properties and formula are included.

Copies of Cat No. 100 are available on letterhead request to E. H. Sargent & Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill.

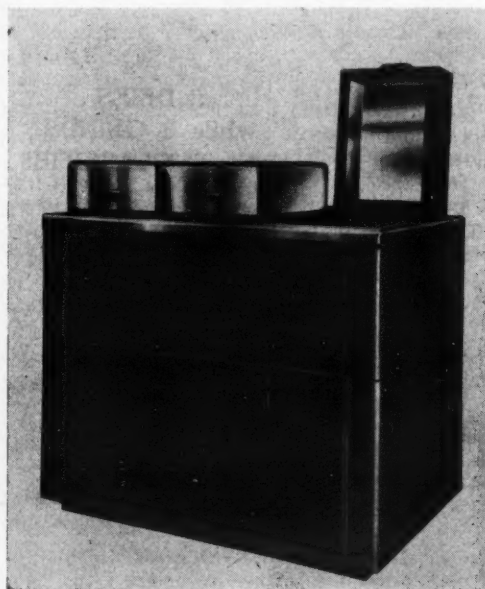
Low temperature cabinets provide for accuracy and convenience . . .

full range of tests is covered by two cabinets

Uses: For tests such as ASTM D-97, AAF Specification 3608, API No. 506 and similar tests calling for low temperature control.

Features: Cabinets reach operating temperature rapidly — coldest compartment reaches -90°F in about $2\frac{1}{2}$ hr, according to manufacturer.

Description: Operational simplicity and a minimum of maintenance service are prime objectives in the redesign of Cloud and Pour Test Cabinets



Useful in tests calling for low temperature control

for use as low as -90°F . Two cabinets cover the full range of tests — 3-compartment unit operates at plus 30, 0 and -30°F , while the 2-compartment cabinet operates at -60 and -90°F . Maker reports that compartment thermostats are pre-set and automatically hold temperatures within 2°F .

Lids of cabinets are lighter in weight, minimizing operator fatigue during constant handling, and the convenient cabinet height eliminates reaching from awkward positions.

(Manufactured by Precision Scientific Co., Dept. CP, 3737 W. Cortland St., Chicago 47, Ill. . . . check CP 3531 on handy form, pages 2 and 3.)

Here's Proof of Acme acceptance throughout the refrigeration industry

These Original Equipment Manufacturers . . .



ACME INDUSTRIES, INC.

Continuously Serving Air Conditioning and Refrigeration Industry since 1919

When inquiring check CP 3532 on handy form, pgs. 2-3

For over thirty years ACME has been producing air conditioning and refrigeration products preferred by original equipment manufacturers of commercial and industrial refrigeration and air conditioning equipment.

ACME's background as heat transfer specialists means dependable, highly efficient fluid chillers, freon and ammonia condensers, oil separators, heat exchangers, liquid receivers, evaporative condensers, cooling towers, and allied products for original equipment manufacturers and general distribution.

Products of the outstanding manufacturers whose trademark appears on this page depend on ACME to maintain their high standards by using components from the complete Acme line.

Select component parts from this
COMPLETE *Acme* LINE

DRY-EX* WATER CHILLERS

More than 700 combinations from which to choose, assuring you of the most efficient chiller operation obtainable. Capacities from 5 to 260 tons for all common liquid chilling applications.

ACME CONDENSERS

More than 120 models and standard sizes of Freon and Ammonia shell and tube, and shell and coil types. Capacities from $\frac{1}{2}$ to 700 tons.

BLO-COLD* INDUSTRIAL UNIT COOLERS

For vegetable storage, packing plants and low temperature installations. 5 distinct series for either Freon or Ammonia with more than 260 combinations.

ACME COOLING TOWERS

Available for use where compactness counts. An all metal tower completely galvanized for long life. Capacities from 3 to 60 tons.

ACME OIL SEPARATORS

A complete line of Freon or Ammonia separators for $\frac{1}{4}$ to 100 ton systems.

ACME HEAT EXCHANGERS

Compact, efficient Freon suction and liquid line heat exchangers designed for systems from 3 to 200 tons.

ACME LIQUID RECEIVERS

More than 70 standard sizes for Freon, Ammonia, or other refrigerants.

HI-PEAK* WATER COOLERS

Seven standard sizes providing large storage capacity and all non-ferrous surfaces in contact with the fluid.

ACME EVAPORATIVE CONDENSERS

For Freon or Ammonia. More than 30 models with capacities up to 1,250,000 BTU/hr. from which to choose. Your choice of either copper tubing or pipe coils. Completely hot-dipped galvanized after fabrication. Capacities from 4 to 130 tons.

FLOW-COLD* PACKAGED LIQUID CHILLERS

A factory assembled, pre-tested liquid chilling unit shipped ready for instant installation. Balanced performance from matched Acme components for systems of 2 to 15 tons. Also used as a Heat Pump providing both heating and cooling for year-round air conditioning.

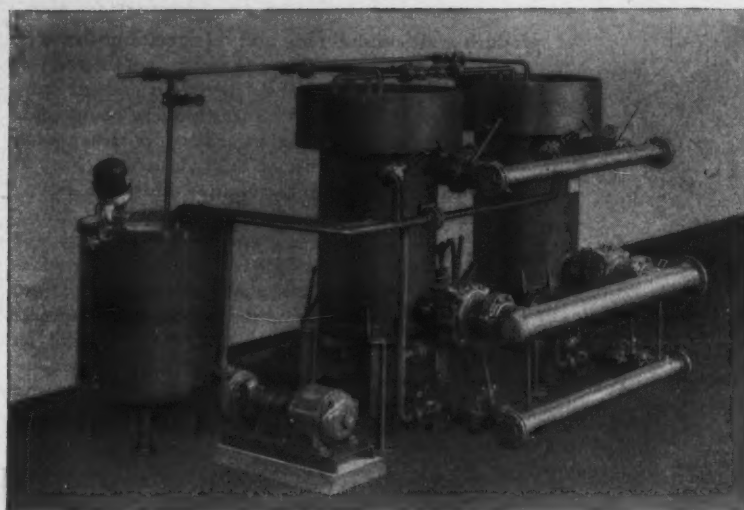
FLOW-TEMP* REMOTE ROOM CONDITIONERS

Designed for the modern recirculated hot or cold water air conditioning systems. Whisper quiet with variable air recirculation permits efficient individual zone control.

*Trade Mark



JACKSON,
MICHIGAN



YOUR FILTERING PROBLEM A SPECIAL ONE?

Then it's even more important that you find out what PORO-STONE filtration can do. Shown above is an Adams packaged plant for continuous filtration of molten phosphorus. This is another adaptation of standard Adams design to a special filtering problem. The savings in engineering time and in delivery afforded by such flexibility can scale your "special" job down to "standard" proportions.

Write for Bulletin 431.

ADAMS PORO-STONE FEATURES

- permanent filter media
- backwash without disassembly
- "packaged" ready for use
- with or without filter aid

R. P. ADAMS CO., INC. 243 EAST PARK DRIVE
BUFFALO 17, N. Y.

When inquiring check CP 3533 on handy form, pgs. 2-3

FOR THE LABORATORY

Regulated 6-volt DC power unit eliminates storage batteries or battery power supplies

Operated from a 115-v AC power line, either 50 or 60 cycles, precision Voltage Stabilizer offers: a highly regulated voltage from the main terminals, adjustable between 5.5 and 6.5 v DC, with currents up to 5 amp; also, fully stabilized lower voltages from an intermediate terminal connecting with a built-in voltage divider, which can be set to deliver



Provides with range of regulated voltages for lab

any value from 0 to 6.5 v DC at currents up to 1 amp. By disconnecting the voltage divider, user may have option of receiving up to 6 amp from the main terminals (stabilized 5.5-6.5 v). A further option of delivering any voltage from 0 to 10 v from the main terminals is available by sacrificing part of the voltage regulation. Voltage regulation, in normal operation, is within plus or minus 0.01% of the rated output.

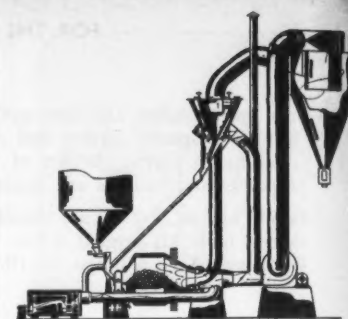
Unit is recommended for general laboratory purposes as well as particularly for supplying voltage requirements of spectrophotometers.

(Available from New York Laboratory Supply Co., Inc., Dept. CP, 78 Varick St., New York 13, N.Y. ... or for more information check CP 3534 on handy form, pages 2 and 3.)

Unit determines hardness of enamel, varnish films

Used for penetration testing of enamel and varnish films, scratch test apparatus consists of a hardwood base into which is built a sliding brass plate. A counterbalanced, pivoted arm mounted on the base carries a holder for the test needle and a disc support for the requisite test weights. Apparatus is supplied complete with 4 cylindrical weights totaling 1000 gm.

Test is carried out by an electric indicating apparatus in which the test panel is clipped on the sliding plate and drawn backward and forward beneath the loaded needle; no penetration through the enamel or varnish film to the panel should



**It DRIES
while it GRINDS
while it CLASSIFIES**

The Hardinge "Thermomill" is an ingenious combination of Conical Mill, air classification system and air pre-heater. It dries, grinds and classifies — in a single system — materials carrying an appreciable amount of surface moisture, reducing them to dry, finely-ground products. Write for Bulletin 17-B-13.

HARDINGE
COMPANY, INCORPORATED
YORK, PENNSYLVANIA • 241 Arch St. • Main Office and Works
New York • Toronto • Chicago • St. Louis • Boston • Salt Lake City • San Francisco

When inquiring check CP 3535
on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

occur. If the needle does scrape through, the fact is indicated by the glowing of a small red pilot light. Size of panel is limited to $2 \times 5\frac{1}{4}$ ". Specifications, features, and principle of operation are outlined in 2-page bulletin. Bul 129 is issued by Gardner Laboratory, Inc., Dept. CP, Bethesda 14, Md. When inquiring specify CP 3536 on handy form, pages 2 and 3.

Bench-type test chamber requires 30 min or less for pull-down to minus 80°F . . .

uses reverse-cycle refrigeration for heating Uses: Suitable for environmental testing of components in the temperature ranges of -80 to plus 185°F and -100 to plus 250°F.

Features: Rapid pull-down of temperature — pull-down to -80°F requires 30 min or less. Use of reverse cycle refrigeration for application of heat eliminates the hazards associated with open heating elements.

Description: The Webber High-Low Temperature Bench-Type Test Chamber has chamber dimensions of $12 \times 12 \times 12$ " and overall dimensions of $50 \times 26 \times 20$ ". Equipped with air-cooled compressors, the unit is quiet in operation. Cabinet is fabricated of stainless steel.

Blower is provided for even distribution of temperatures and greater testing accuracy. Latch-type door provides for the use of a mounting board affixed to the back of the door on which component parts may be mounted for testing. Holes may be drilled through the door to provide for electrical contacts. Hinge-type door is also available.

Same model is available at temperatures from -100°F to plus 250°F, without a change in cabinet size.

(Product of Dept. 00212, Industrial Freezer Div., Webber Manufacturing Co., Inc., Dept. CP, 2740 Madison Ave., Indianapolis 3, Ind. . . . check CP 3537 on handy form, pages 2 and 3.)

Factual article gives highlights of laboratory work at NBS

Illustrated bulletin describing many types of laboratory equipment contains lead article dealing with the diverse functions of the National Bureau of Standards. Information is given on the nature and accomplishments of several fundamental and applied research projects in the fields of physics, mathematics, chemistry and engineering.

Among the items of laboratory equipment described are variable transformers, jar mills, densitometers for paper chromatography, surface temperature thermometers, tablets for use in Kjeldahl digestions, a hand operated demineralizer, counter-rotating stirrer, and stainless steel laboratory filters.

"Burrell Announcer" No. 53-6-51 is issued by Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. When inquiring specify CP 3538 on handy form, pages 2 and 3.

This is the art for next month's ads on the new Allmetal Plant in Garden City. Any Comments? C.W.

Maybe we should emphasize the product in the artwork — show various types of stainless steel screws, nuts, bolts, etc.

pretty picture, but a comparison is needed — show how new plant will increase production. Better "in stock" set up.



Don't let the newness of the plant obscure the old story, still true: Allmetal gives wide selection of standard and "AN" fasteners, quick delivery and fast production of "specials" too. Jc

mention somewhere that this new and larger plant makes possible faster service on special orders. J.M.



Write, on your letterhead, for our new, 96-page catalog No. 53
ALLMETAL
SCREW PRODUCTS COMPANY, INC.
821 STEWART AVE., GARDEN CITY, L. I., N. Y.
TELEPHONE—GARDEN CITY 3-1200

use this

When inquiring check CP 3539 on handy form, pgs. 2-3

Try Woven GLASS FILTER CLOTH for

STRONG ACID SOLUTIONS

OXIDIZING SOLUTIONS

at HIGH temperatures

NFM Woven Glass Filter is as chemically resistant as chemical glass itself! It will withstand extremely high operating temperatures and is completely resistant to hot acids and hot oxidizing solutions of all types.

NFM Woven Glass Filter Cloth may well be the answer to your TOUGH filtration problem. Available in roll quantities in widths from 26" to 68" (100 linear yards or more) or in any length in the standard 38" width. Twill, chain and plain weaves. May we send you a pilot test sample?

If you want the cloth made up into filter element covers, anode bags, dust collector bags, etc., we are in position to do this at nominal cost . . . considerably less cost than when they are prepared in your plant. They'll be "all glass", too. We use glass thread for sewing.



NFM Weavers of Industrial Filter Media for over Forty Years
The National Filter Media Corp.

General Offices & Mills: New Haven 14, Conn.
Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives

Chicago, Ill. 2627 West 19th St.	Cincinnati, Ohio Bancor Center Bldg.	Houston, Texas 1486 Second National Bank Bldg.	Ole, Norway Nicolai Friis	Johannesburg, South Africa Edward I. Botemann
-------------------------------------	---	---	------------------------------	--

When inquiring check CP 3540 on handy form, pgs. 2-3

FOR THE LABORATORY

Recording analytical balance follows weight changes with good accuracy . . .

combines versatility, convenience and low cost; suitable for many lab applications

Designed for many laboratory applications requiring a record of weight as a function of time, an analytical balance recently developed at the National Bureau of Standards automatically makes a continuous record of changes in weight. The unit is claimed to follow even rapid changes with good accuracy.

The instrument uses a conventional laboratory balance modified so that changes of weight are balanced by adjustment of a magnetizing current. Balancing force results from the interaction of the magnetic field of a solenoid with the field of a permanent bar magnet suspended, inside the solenoid, from one side of the balance. Automatic balancing is achieved by means of a photoelectric sensing arrangement in which a beam of light is reflected to a dual phototube from a mirror mounted on the balance beam. The two sections of the phototube are connected in a bridge circuit, the output of which is amplified and applied to the solenoid. Any change in weight tending to produce unbalance is promptly counteracted by whatever change of solenoid current is needed to maintain balance (within a small fraction of a division of the balance scale). An electronic damping circuit eliminates oscillations and enables the electrical output of the instrument to faithfully follow very rapid changes of weight.

The record of weight changes is obtained by connecting a resistor in series with the solenoid and applying the voltage developed across this resistor to a commercial recording potentiometer of the strip-chart type. Since the balancing force exerted on the magnet is directly proportional to the current through the solenoid, the weight scale is linear and the recorder is easily made to read directly in milligrams. By substituting a different resistor, a different magnet, or both, full scale ranges of as little as 10 mg or as much as 1 gm are obtained.

(Information obtained from a technical report of the National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C.)

Delivers signals at preset values of extension during tests

Uses: For measuring extension under load in tension test specimens, and automatically controlling auxiliary devices.

Features: Instrument delivers signals at preset values of extension. Signals are visual (lamp), audible (buzzer), and electrical, closing relay contacts and actuating an auxiliary device such as a load holder, load indicator, load printer, or other device.

Description: The Baldwin Extension Indicator is essentially a balancing miniature variable transformer with a movable core which is actuated through an electronic amplifier under control of the extensometer transformer. The only control

"SERV-RITE"

**Insulated
Thermocouple Wire
Extension Lead Wire
FOR**

PLATINUM COUPLES
CHROMEL ALUMEL
IRON CONSTANTAN
COPPER CONSTANTAN
IRON CUPRONEL

No matter what your wire or insulation requirements may be, you can depend on Gordon "Serv-Rite" insulated wire for pyrometers—recognized as a standard of highest quality for nearly half a century. All "Serv-Rite" wire is now manufactured in the new, completely modern Gordon plant, employing up-to-date equipment and machinery, supervised and operated by skilled technicians—your guarantee of continued precision quality. In addition to maintaining large stocks of all common types of wire, Gordon will manufacture special insulation, in long or short runs, to suit your individual needs and meet your most rigid specifications.

All Types of Insulation

Felted Asbestos
Asbestos Braid
Weatherproof Braid
Glass Braid
Polyvinyl Plastic
Nylon Braid
Stainless Steel Armored Braid
Silicone Treated
Cotton Braid
Lead Jacket



The home of "SERV-RITE"

Full Particulars on Request

**GORDON
SERVICE**

CLAUDE S. GORDON CO.

Manufacturers & Distributors

Thermocouple Supplies • Industrial Furnaces & Ovens
Pyrometers & Controls • Metallurgical Testing Machines
Dept. 19 3000 South Wallace St., Chicago 16, Ill.
Dept. 19 2035 Hamilton Ave., Cleveland 14, Ohio

When inquiring check CP 3541 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

on the instrument is a dial graduated in tenths of a per cent extension up to 0.7% by means of which the signals can be set for the desired extension.

Instrument is applicable to any type testing machine in conjunction with any standard high magnification extensometer incorporating a miniature variable transformer with a movable core. The extensometer may be of any gage length.

(Product of Baldwin-Lima-Hamilton Corp., Dept. CP, 940 Simpson St., Philadelphia 42, Pa. . . . or for more information check CP 3542 on handy form, pages 2 and 3.)

Determines traces of water by simple dropper test

Traces of water in various products may be determined rapidly with a delicate reagent by a simple volumetric procedure. The method requires no heating of sample or sample-reagent mixture. The reagent is merely added drop by drop to a given quantity of sample to a blue-green endpoint. Each drop of reagent, using a dropper furnished with a 4-oz bottle of the material, is equivalent to 0.2 mg of water.

The test is useful in the laboratory, in the plant for process control, and wherever detection of moisture is important in raw materials or finished products, such as solvents, paint thinners, plasticizers, higher alcohols, petroleum products, gasoline, oils, greases, vegetable oils and fats, waxes, and polyglycols and their derivatives.

(Product of R. P. Cargille Laboratories, Inc., Dept. CP, 117 Liberty St., New York 6, N. Y. . . . or for more information check CP 3543 on handy form, pages 2 and 3.)

Laboratory tubing available in two different degrees of flexibility

Uses: Where tubing must have resistance to acids, alkalis and solvents and where application requires toughness, low temperature flexibility and low water-vapor permeability.

Features: Available in two different degrees of flexibility.

Description: Tygothene plastic tubing is based on polyethylene resins and was developed as a companion to manufacturer's Tygon tubing. The natural color of the product is a translucent white, with translucency lessening as wall thickness increases. Material is non-toxic, tasteless and odorless, and maintains stability up to temperature limitations.

Formulation "A", the whiter of the two, is of medium flexibility and is available for immediate delivery. Formulation "B" is of maximum flexibility possible with polyethylene compounds, but, due to critical materials, is available on rated orders only.

(Products of The U. S. Stoneware Co., Dept. CP, 5300 E. Tallmadge Ave., Akron 9, Ohio . . . or for more information check CP 3544 on handy form, pages 2 and 3.)

PIGMENT DUST GETS "BRUSH OFF" at Advance Paint Co.!



DUMPING—Portable hoods with flexible ducts control dust released in dumping to ball mills on floor below. ROTO-CLONE in background serves as exhauster and collector for entire system.

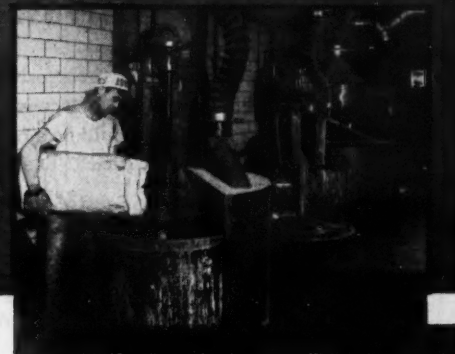
ROTO-CLONE collects up to 398 lbs. of dust per hour from dumping, weighing and mixing operations.

Here's how Advance Paint Co., Indianapolis, "spruced up" their Mixing Department. Dust from every source is exhausted and collected by a Type W ROTO-CLONE.

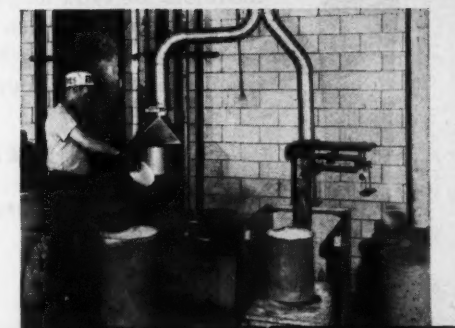
Results: working conditions vastly improved; cleaning costs cut.

The winning combination? One, ingenious hood design. Two, the Type W ROTO-CLONE which combines dynamic precipitation with water sprays for high collection efficiency of the finest dust particles—yet uses less space than any other dust control device!

ROTO-CLONE Dust Control is no one single piece of equipment. It's a group of many units and features from which AAF engineers assemble the one best collector for your needs. For complete ROTO-CLONE information, call your local AAF representative or write us direct.



MIXING—Hinged hoods permit efficient dust control for Pony Mixers without interfering with operation.



WEIGHING—Fines escaping during material handling at each weighing station are exhausted by well-designed hoods.

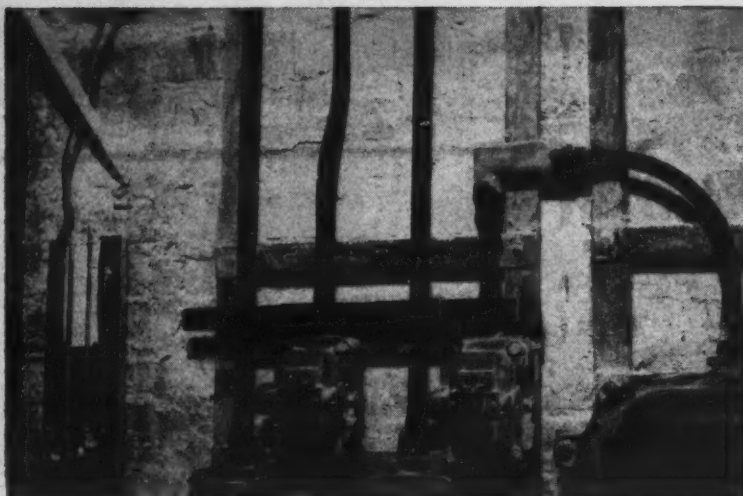


American Air Filter

COMPANY, INC.

258 Central Avenue, Louisville 8, Kentucky • American Air Filter of Canada, Ltd., Montreal, P. Q.

When inquiring check CP 3545 on handy form, pgs. 2-3



Conduit Protection Under Tough Corrosive Conditions

• The action of corrosive fumes, gases, steam or other material on electrical conduit is a continuing problem. It would be a costly one if it weren't for "Dekorun-Coated®" ELECTRUNITE E.M.T.

This corrosion-resistant raceway gives double protection. A plastic armor of polyethylene is extruded over zinc-coated steel. Couplings and connectors are protected by vinyl or plastic tape. Runs are protected from end to end.

The result: raceways that are easy to install, long lasting, at lower cost, especially where operating conditions are extra tough. Booklet DEK-1 lists corrosive materials which can't affect "Dekorun-Coated®" E.M.T., along with instructions for installation. For your copy, write to:



**STEEL AND TUBES
DIVISION**
REPUBLIC STEEL CORPORATION
205 East 131st Street
Cleveland 8, Ohio



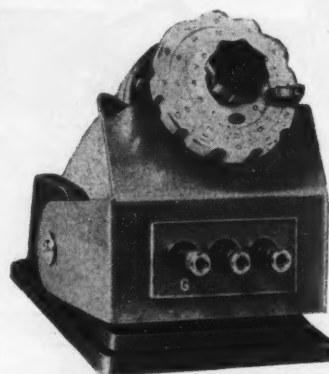
When inquiring check CP 3546 on handy form, pgs. 2-3

FOR THE LABORATORY

Resistance box permits adjustment of angle of dial face . . .

dial settings read directly to three or four places

Uses: For measurements and applications requiring a decade resistance box in electrical engineering and other laboratories.



Convenient, adjustable dial face permits easy reading of decade resistance box

Features: Angle of dial face may be adjusted for most convenient reading. Heavy base gives firm support. Unit can be used at frequencies as high as several hundred kc.

Description: According to the manufacturer, the Beco Dekabox incorporates precision wire-wound resistors which are individually adjusted to better than plus or minus 0.05%; temperature coefficient is less than plus or minus 0.002% per degree Centigrade. All switch contacts are solid silver. Interpolating rheostats have Paliney contacts. Unit measures $5\frac{1}{2} \times 4\frac{1}{2} \times 5\frac{3}{8}$ " overall.

Resistance box is available in 2 models — Model DB-265 has two decades of fixed resistors while the Model DB-365 has three decades. The former unit is available in values of 11,990 and 119,900 ohms, while Model DB-365 is available in values of 119, 1190, 11,990 and 119,000 ohms.

(Product of Brown Electro-Measurement Corp., Dept. CP, 4635 S. E. Hawthorne Blvd., Portland 15, Ore. . . or for more information reader may simply check CP 3547 on convenient Reader Service slip between pages two and three.)

Look What We've Pulled in for You!



Just as the name implies, the House of Stainless is dedicated to furnishing your every need in stainless steel. To fulfill this obligation to you in the chemical industry, we are constantly adding new items to our stocks. Two of our latest "catches" are:

TYPE 316 flat and angle in well diversified stocks for service where stainless of extremely high resistance to corrosion is required.

TYPES 304 and 316 heavy plates up to 6 feet in width and 16 feet in length.

For these or any other stainless items, write, wire or phone.

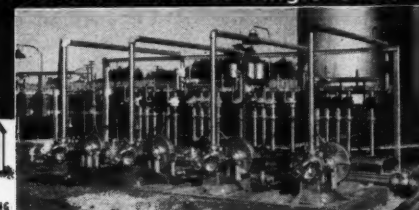
CHICAGO STEEL SERVICE COMPANY
Kildare Ave. at 45th Street, Chicago 32, Ill.
Telephone: LAfayette 3-7210



When inquiring check CP 3548 on handy form, pgs. 2-3

SAVE with VIKING PUMPS

Use All-Weather Twin or Single Units



Mount Viking Pumps Outside . . . with No Protection Needed!

Either winter or summer, no protection is needed for Viking all-weather single or twin units.

Made for pumping all types of petroleum and chemical products from the very lightest to the most viscous.

Out door units add safety to the pumping job as well. No fumes to collect.

Neater and handier to use. No cramped quarters creating hazardous and unsightly conditions. Makes possible easier and less costly piping arrangements.

In every way you save with Viking All-Weather pumps.



Ask for bulletins B400CC & SP223CCC today.

VIKING PUMP COMPANY
CEDAR FALLS, IOWA

When inquiring check CP 3549 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Easily-regulated unit measures both Saybolt Universal and Furol viscosities . . .

has ability to hold oil samples within 0.02°F at temps between 60 and 220°F

Uses: For measuring both Saybolt Universal and Furol viscosities.

Features: Thermostated bath encases the Saybolt tubes and provides increased reliability when using unit.

Description: Designed for dual-purpose convenience, the Fisher/Tag Saybolt Viscosimeter is fabricated of 18:8 corrosion-resistant stainless steel and is spot-welded and soldered for leakproof construction. A drain-overflow is provided to hold the level of bath liquid to the prescribed height on the Saybolt tubes.



Provides convenience in viscosity determinations

After being brought to the desired reading with a variable-input heater delivering 0-1000 w, the bath temperature is maintained by a 50-w intermittent heater which is controlled by a special bimetallic thermoregulator. The variable-input heater also provides continuous heat above 120°F and is controlled by a variable-voltage transformer from a dial which is located on the front panel of the instrument.

The viscosimeter can be used with as many as 4 ASTM-type Saybolt tubes and is available with or without tubes depending on user's preference. Saybolt and/or Furol tubes can be used in any combination needed.

The 4 tubes are grouped in the front of bath. Standard 60-ml receiving flasks with flared necks, made to ASTM design, catch the oil as it drains from each tube to be timed for Saybolt units. Position of the flask is critical (to reduce turbulence, eliminate foaming, etc). In this unit an aluminum template assures proper position.

(Product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or to secure more information reader may simply check CP 3550 on convenient Reader Service slip between pages two and three.)

TRAMP WATER EJECTION
Developed by
SCHUTTE and KOERTING
Company

ENGINEERING News

JET APPARATUS - HEAT EXCHANGERS - CONDENSERS - SPRAYERS - PUMPS - VALVES - FITTINGS

If You're PUMPING, HEATING, MIXING, SPRAYING, ATOMIZING LIQUIDS, Or If You're HANDLING SEMI-SOLIDS Or SLURRIES, Or If You MUST MOVE, COMPRESS, Or WASH AIR Or GASES And If CORROSION Or EROSION Present A Problem, Then...You NEED What We HAVE—

Information On SK JET APPARATUS

SK Jet Apparatus is used in thousands of process operations for performing one or a combination of the headlined functions. Here's why—

Jet Apparatus is exceedingly simple in design and construction, reliable in operation. There are no rapidly rotating parts to wear. It requires little maintenance. Jet equipment is unusually small in relation to the work it does and its cost is correspondingly low. Requiring little attention, a jet may be located in remote and inaccessible places. In many applications, it does what no other equipment can do—pumps and heats, entrains and scrubs, pumps and mixes.

Because Jet Apparatus is so simple in

design, a wide range of corrosion and erosion resistant materials can be used in manufacturing. Depending upon the nature of the material handled, jets can be made from such materials as cast iron, bronze, porcelain, special stainless steels, hard lead, "Durimet," "Illium," "Haveg," "Teflon," Hastelloy, Titanium, stoneware, carbon, PYREX brand tubing, and others. Jet equipment can be lined with lead, rubber, phenolic resins, other materials.

Generally speaking SK Jet Apparatus includes all types and sizes of the equipment listed below, for which information is available. If you want literature on any particular type, use the coupon below. We'll be glad to supply it.

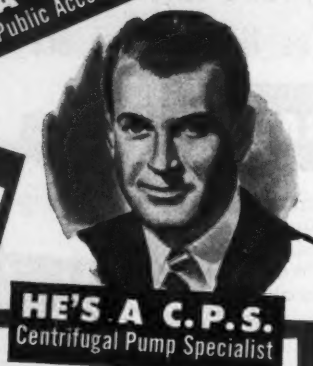
PLEASE SEND ME INFORMATION ON THE FOLLOWING:

- | | |
|---|--|
| Steam Jet Syphons and Evacuators (2-A)..... <input type="checkbox"/> | Fume Scrubbers (4-R)..... <input type="checkbox"/> |
| Water Jet Eductors, Agitators, Evacuators, Mixers (2-M)..... <input type="checkbox"/> | Low Level Multi-Jet Condensers (5-A)..... <input type="checkbox"/> |
| Steam Jet Heaters for Liquids, Gas Holder Heaters and Sparger Nozzles (3-A)..... <input type="checkbox"/> | Barometric Multi-Jet and Spray Condensers (5-AA)..... <input type="checkbox"/> |
| Steam Jet Blowers and Blast Nozzles (4-AB)..... <input type="checkbox"/> | Low Level Eductor Condensers (5-B)..... <input type="checkbox"/> |
| Steam Jet Exhausters and Primers, Compressors and Agitators (4-E)..... <input type="checkbox"/> | Steam Jet High Vacuum Pumps and Apparatus (5-EH)..... <input type="checkbox"/> |
| Steam Jet Thermo-Compressors, Gas Jet Compressors (4-F)..... <input type="checkbox"/> | Spray Nozzles and Systems (6-A)..... <input type="checkbox"/> |
| Water Jet Exhausters and Primers (4-P)..... <input type="checkbox"/> | Desuperheaters (6-D)..... <input type="checkbox"/> |
| | Everdur Valves and Fittings (7-E)..... <input type="checkbox"/> |



SCHUTTE and KOERTING Company
Manufacturing Engineers
12 STATE ST., PITTSBURGH, PA.
CORNWELL, NEW JERSEY
BUCKS COUNTY, PA.

When inquiring check CP 3551 on handy form, pgs. 2-3



Both these SPECIALISTS help you operate efficiently, reduce wasteful spending



No business would attempt to operate very long without the services of an accounting specialist.

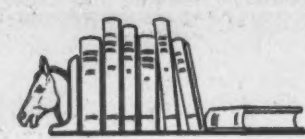
And, no liquid handling program should be started without the guidance and recommendations of a WEINMAN Centrifugal Pump Specialist.

This man knows how to reduce your pumping costs by improving pumping efficiency and capacity. He can specify the right pumps for your needs with confidence, because that is his business — because his career and his success depend upon his ability to do so.

So, if you're considering the installation of new pumps, or the improvement of your present liquid handling system, call in a specialist . . . a WEINMAN Centrifugal Pump Specialist.

Representatives in principal cities.

WEINMAN Pump Mfg. Co.



Recent Books



ENCYCLOPEDIA of CHEMICAL TECHNOLOGY VOL 10

Another volume of the "Encyclopedia of Chemical Technology" has appeared — namely Volume 10. Like its predecessors it fits into the 900-page plus mold and continues its excellent study of chemical science. Volume 9 left off at Penicillin, and Volume 10 picks up the thread at Pentacene and wends its way through such subjects as Perfumes, Peroxides and Peroxy Compounds, Petroleum, Pharmaceuticals, Phenolic Resins and Plastics, Phosphorus Compounds, Pigments, Pipes and Valves, Plasticizers, Polyamides, Polyethylene and right up to Polymethine Dyes on the last four pages.

Some 66 authors have contributed to this volume, including such names (plus topic) as: R. S. Aries (Plant Location); W. R. Brookes of G. E. (Phenolic Aldehydes and Phenolic Ethers); A. K. Doolittle of U.C.C. (Plasticizers); H. M. Merker and A. R. Whale of Parke, Davis & Co. (Pharmaceuticals); John Salviani of Chem. Construction Co. (Plant Layout); R. I. Stirton of Oronite Chem. Co. (Phthalic Acids); and John Happel of New York Univ. (Petroleum-general editorship).

All in all the work continues to be an extremely readable refresher and post-graduate course in both chemistry and chemical engineering.

To obtain "Encyclopedia of Chemical Technology, Vol 10" remit \$30 (\$25 to holders of subscription) direct to Interscience Publishers, Inc., Dept. CP, 250 Fifth Ave., New York 1, N. Y. When inquiring specify CP 3553 on handy form, pages 2 and 3.

INDUSTRIAL WASTES

Their Disposal and Treatment

Reviewed by Gregoire Gutzeit, Assoc. Dir.,

Research & Development Dept.

General American Transportation Corp.

This work (486 pages, not including the index), is the latest addition to the A.C.S. Series of Chemical Monographs, edited by Willem Rudolfs of Rutgers University, and containing contributions by a group of outstanding specialists in the field. After a general introduction summarizing the facts about stream pollution, the subject matter is subdivided according to the industry producing the waste. In the reviewer's opinion, this method, although commonly used (all previous books follow the same pattern), is susceptible to improvement. It should be at least preceded by a section describing the various "unit processes" used in the treatment and disposal of industrial wastes, such as Grease Collection, Neutralization, Chemical Clarification, Settling, Biological

Oxidation, Adsorption, etc., without mentioning any specific application thereof.

Discussion of the various problems presented by most types of industrial wastes is up to date and authoritative. The bibliographical references are comprehensive and always pertinent. The individual chapters follow a logical plan including a short description of the processes producing the wastes, sources, quantities, and character thereof; methods of treatment and recovery (if feasible); and, in several instances, the effect of the wastes on domestic sewage treatment operations.

The book is a very valuable addition to the literature on this subject, and should be a permanent addition to any technical library.

To obtain "Industrial Wastes — Their Treatment and Disposal" remit \$9.50 direct to Reinhold Publishing Corp., Dept. CP, 330 West 42nd St., New York 36, N. Y. When inquiring specify CP 3554 on handy form, pages 2 and 3.

TEXTILE FIBERS, YARNS & FABRICS

Reviewed by R. K. Kennedy

Carbide and Carbon Chemicals Co.

A Div. of Union Carbide and Carbon Corp.

Ernest R. Kaswell has, in this 552-page book, organized and compiled one of the most thorough evaluations of the functional merits of all fibers, old and new, and the properties of fabric structures in existence. Drawing from papers published by some 400 investigators, he weaves the material into a logical sequence that provides the reader with basic information on all aspects of what may be expected from fabrics in service.

Basically an annotated bibliography and a critical analysis of results with special reference to wool, Kaswell's work takes the engineering approach. It is tuned to the technically trained individual who may have but superficial knowledge of any specific branch of textile technology. Yet it delves into each phase to provide a good basis for further research.

The book presents the subject matter in two broad discussions: the inherent properties of the fibers themselves, and the properties of textile structures that depend upon both fabric geometry and the properties of the fibers constituting the fabric. The first section presents data on the behavior of various fibers under tension, torsion, shear and friction; then deals with the effects of moisture, temperature, aging, weather, and other common environmental influences; finally covering, in general, the dyeing characteristics of the natural and synthetic fibers.

In the second section are discussed the more complex

When inquiring check CP 3552 on handy form, pgs. 2-3

characteristics of fabrics, such as compressional resilience; transmission of heat, air, moisture and water; resistance to creasing, wrinkling, and abrasion; stability and fulling; and then the important problem of soiling and soil-removal, with methods of laundering and dry cleaning. The section ends with a well-considered discussion of such intangible properties as hand, drape and luster.

Possibly the only criticism that can be made of this work stems from the inevitable variances in conclusions drawn by investigators using different approaches to the same problem. In some cases, the author explains the variances; in others, the editorial conclusions differ from the original source material. These discrepancies are explained by the author who, confronted with "a more formidable assignment (by The Wool Bureau) than originally recognized", had no choice but to make certain omissions.

Certain of the literature surveyed is so old as to be obsolete in reporting properties of new fibers, and some of the tabular matter makes comparisons and draws direct conclusions between fibers and fabrics that are not strictly comparable. In the overwhelming majority of cases, however, the author has been alert to these discrepancies and has produced a valuable contribution to the textile industry.

To obtain "Textile Fibers, Yarns & Fabrics" remit \$11 direct to Reinhold Publishing Corp., Dept. CP, 330 West 42nd St., New York 36, N. Y. When inquiring specify CP 3555 on form, pages 2 and 3.

SYNTHETIC ORGANIC CHEMISTRY

Reviewed by Edward S. Lewis

Assoc. Prof. of Chemistry

The Rice Institute

"Synthetic Organic Chemistry" by R. B. Wagner and H. D. Zook is a very extensive compilation of methods used for the synthesis of a wide variety of types of organic compounds. The reactions are classified by the type of functional group produced, thus all ketone syntheses are together. Nearly all standard reactions of synthetic usefulness are mentioned, and examples of those from the recent literature (since 1919) are cited in tabular form. These tables, arranged for each type of compound in order of number of carbon atoms, show the method used, the yield obtained, and the reference to the original literature.

The most valuable feature of the 887-page book as a reference work is the extensive coverage of the literature. No attempt has been made to give the experimental conditions for any substance, but such details are of course available in the literature cited. This book may therefore become the first place to look when a reaction is to be attempted, both for ideas on the type of reaction to be used and for reference to the experimental details. The book is therefore highly recommended.

To obtain "Synthetic Organic Chemistry" remit \$11.50 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 3556 on handy form, pages 2 & 3.

for
economical
positive*
safety



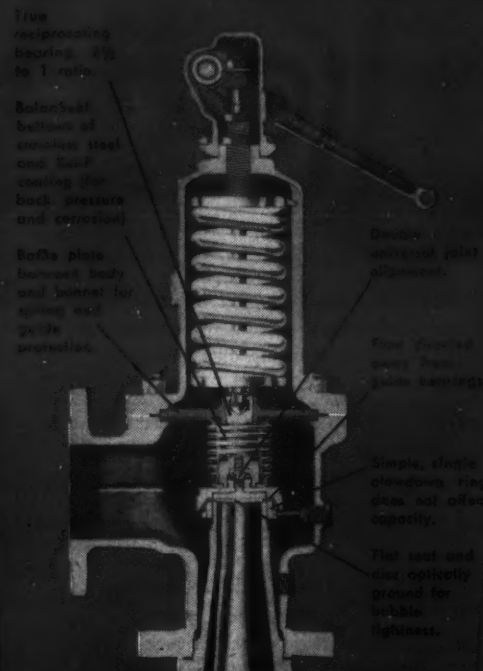
ENGINEERING
CORPORATION

505 Commercial Avenue
PALISADES PARK, NEW JERSEY

Affiliates:

- FARRIS FLEXIBLE VALVE CORPORATION • FARRIS STACON CORPORATION • FARRIS HYDROTORQUE CORPORATION
- FARRIS HYDROSEAL CORPORATION • FARRIS PICKERING CORPORATION

When inquiring check CP 3557 on handy form, pgs. 2-3



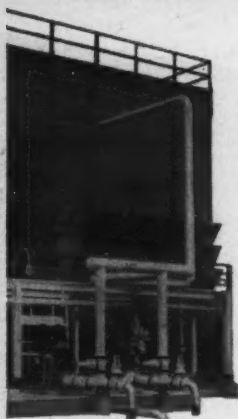
BalanSeal and FarriSeal Safety-Relief Valves

(Pat'd & Pat. Pending)

Corrosion and varying back pressure—the two dangerous enemies of positive safety-relief valve operation—are stopped cold by the ingenious construction of Farris valves. Critical working parts are isolated from the lading fluid so that they can't stick, plug or corrode and the special bellows construction nullifies the effect of back-pressure surge. You get positive protection, under all operating conditions. Manufacturing economies offer realistic pricing—and the design permits the use of much smaller discharge piping, at an important saving. So for safety and economy, specify FarriSeal or BalanSeal safety-relief valves. You're never stuck, because they never stick!

Technical manual, 51B, a treatment on Back Pressure Piping and Surge characteristics and 76-page catalog is yours for the asking.

*ASME-N.B. APPROVED
(Certified for Capacity)

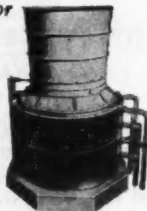


**You
KNOW
YOU'RE
RIGHT!**

Men in the petro-chemical industry who specify Pritchard cooling towers have the satisfaction of knowing they have made the right decision.

How do they know? First, Pritchard experts consult with them on exactly what is needed for the specific cooling job. Then, experienced Pritchard engineers help them select the right tower for that job . . . the unit with the proper capacity and design for efficient operation . . . maximum water-saving. Finally, these men know they can depend on Pritchard to deliver such a tower because of Pritchard's acknowledged reputation for building reliable, rugged, quality units. Pritchard — a founder member of the Cooling Tower Institute — unconditionally guarantees that their towers will perform as specified.

You're right again when you specify a Pritchard QUINTAIR® air-cooled heat exchanger for efficient cooling or condensing of liquids, gases or vapors. Quality construction assures long, trouble-free service . . . skillful design makes any part requiring attention readily accessible for easy maintenance.



*Registered Trade Name

Industry's Partner for Progress

J.F. Pritchard & Co.

ENGINEERS • CONSTRUCTORS • MANUFACTURERS
Dept. 323, 210 West 10th Street, Kansas City 5, Mo.

District Offices: Chicago • Houston
New York • Pittsburgh • St. Louis • Tulsa

Representatives in Principal Cities from Coast to Coast

COOLING TOWERS • SPECIALIZED HEAT EXCHANGERS • GAS & AIR
TREATING EQUIPMENT • CONSTRUCTION & PROCESSING FACILITIES

When inquiring check CP 3558 on handy form, pgs. 2-3

*processing
equipment*



Overall view of maleic anhydride pelletizing installation shows, left to right, flaker with granulator underneath, inclined conveyor, pelletizer with feed hopper on top, and belt conveyor which carries pellets to drums on scale

Easy-to-handle *Maleic Anhydride Pellets* Produced at Rate of 600 lb/hr

King-size "aspirins" will cure headaches of maleic drum beater, will avoid fume and dust of melting-out method

TO make maleic anhydride easier and safer to handle, Reichhold Chemicals, Inc. — which can turn out two million pounds of maleic a year at its plant in Elizabeth, N. J. — has installed equipment for transforming bulk maleic into pellets resembling king-size aspirin tablets. Six hundred lb of pellets, each 1 3/16" diam by 1/2" can be formed per hr.



Reichhold VP Stefan Baum and plant superintendent Richard Studwell take a look at maleic pellet on its way from pelletizer to packaging

Distilled molten maleic is flaked, and the flakes fall directly into a granulator. A screw conveyor carries the granules into pelletizer hopper from which a controlled amount is fed into the 15-stage die of the pelletizer. The pressure-formed pellets are ejected onto a short conveyor belt which carries them to fiber drum resting on weighing scale. Each pellet carries an impression of the Reichhold trademark. Maleic in pellet form has definite advantages to the user. Gone is the practice of pounding a drum of hardened maleic until the chemical softens, then chopping chunks until they can be shoveled into a kettle or reactor. Missing, too, are the dangerous acid dusts and fumes which the alternate melting-out method ordinarily generates.

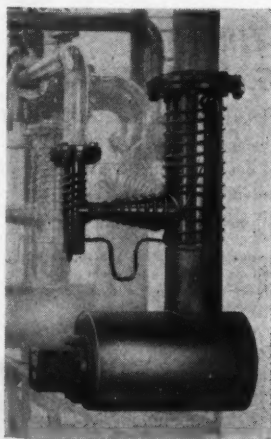
(Flaker, granulator and pelletizer were made by F. J. Stokes Machine Company, Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. . . . or reader may secure more information by simply checking CP 3559 on convenient Reader Service slip between pages two and three.)

Dust doesn't harm insides of high-vacuum pump . . .

oil-diffusion unit removes 1200 cfm of air in region of 10^{-2} to 10^{-4} mm mercury

Uses: High-vacuum pump for vacuum metallurgical processing systems, dehydration, vacuum metallizing, and other applications. Produces ultimate pressure of 10^{-5} mm Hg while operating against a limiting fore-pressure of 0.5 mm Hg.

Features: Will remove air at a rate of 1200 cfm in pressure region from 10^{-2} to 10^{-4} mm Hg. Pump may be applied to systems containing dust and other impurities because of the wide clearances featured in the unique jet design.



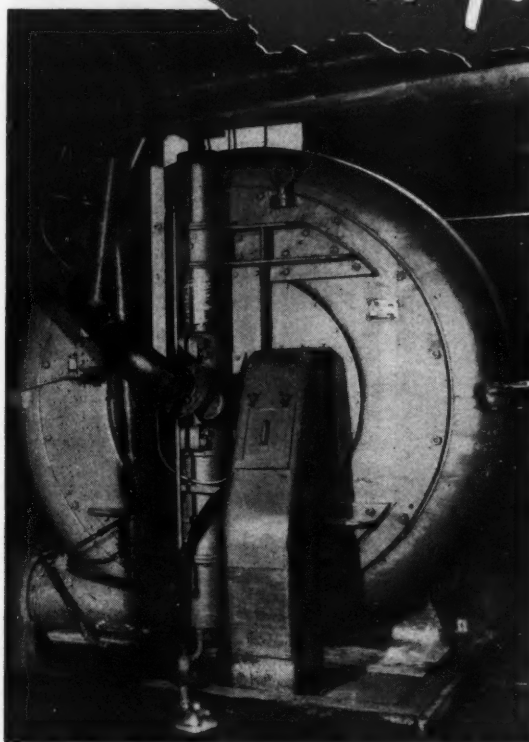
High-speed, high-vacuum pump

Description: The KS-600 combines an oil diffusion jet and a single-stage oil ejector nozzle in one compact casing. Fully insulated boiler is equipped with electric internal immersion type heater which combines low power consumption and high operating efficiency.

(Addition to line manufactured by Consolidated Vacuum Corporation, subsidiary of Consolidated Engineering Corporation, Dept. CP, 735 Ridge Rd., W., Rochester 3, N. Y. . . . or reader may secure more information by simply checking CP 3560 on convenient Reader Service slip between pages two and three.)

Which Centrifuge can provide

the best solution to your problem?



One of seven 67" Reineveld Centrifuges now operating in the world's largest potato starch factory.

This is a question that only *you* can answer . . . because you know the full details concerning your application.

But even complete knowledge of all your needs will not assure your picking the right centrifuge unless you know about ALL centrifuges that can answer your problem.

WE'D LIKE TO TELL YOU ABOUT REINEVELD CENTRIFUGES THROUGH OUR BOOKLET 4-RC-3

Review this booklet and compare centrifuges in detail . . . prices, production, square feet of filtering surface, construction, weight, maintenance or by any yardstick you choose.

Then if you don't honestly believe that Reineveld Centrifuges compare favorably with any other centrifuge of its type from any angle . . . throw the booklet away and forget about what we've said.

But if you agree with us that the Reineveld Centrifugal Machines offer you practical operating advantages . . . then it will pay you to call on Reineveld and Heyl & Patterson for profitable suggestions on your centrifuging problems.

Send today for your copy of Booklet 4-RC-3.

Heyl + Patterson, Inc.

"SINCE 1887"

55 FORT PITT BLVD.

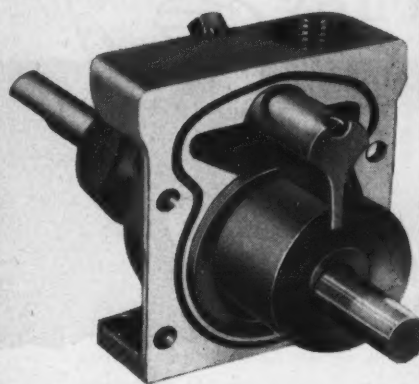
PITTSBURGH 22, PA.



When inquiring check CP 3561 on handy form, pgs. 2-3

interchangeable impellers

ADAPT ALL-CHEM PUMPS TO SPECIFIC REQUIREMENTS



While standard ALL-CHEM Pumps are of ALL-TEFLON and STAINLESS STEEL Construction—impeller materials may be varied to gain advantage in higher pressures or lower costs or both, where these alternate materials are compatible with the fluids to be handled. Consult our engineering department.

This interchangeability is possible because all ECO ALL-CHEM Pumps are precision manufactured to close tolerances so that every part will fit with any other part in any pump with the same serial number whether in Newark or New Delhi.

A great boon to ECO pump users when a handful of replacement parts can put a line of pumps back into top condition with a minimum of time and labor, many miles from our plant.

Outstanding Characteristics: Lowest cost quality pump for All-Chemical service. Positive displacement with two opposed axially oscillating impellers equivalent to duplex piston operation. No air-entrainment, non-foaming, lowest corrosion rate of any stainless steel pump, highest suction lift over widest temperature and viscosity range, self-priming on non-volatile liquids. Applicable to direct motor drive at 1725 RPM and to all other standard driving methods.



ECO

ENGINEERING COMPANY

12 New York Avenue • Newark 1 • New Jersey

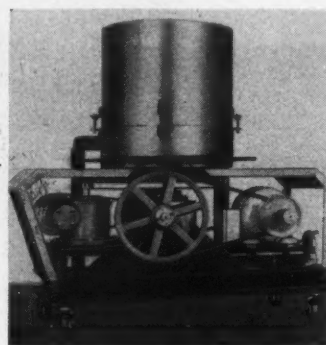
When inquiring check CP 3562 on handy form, pgs. 2-3

PROCESSING

Pilot size feeders for sticky materials can be rented

Pilot size models of the Com-Bin feeder for sticky or non-free-flowing materials are now available on a rental basis for testing in processing plants under simulated commercial scale operation. This type of feeder, introduced a bit more than a year ago, feeds material by slicing it off as it revolves, inside a stationary cylinder, on a rotating circular plate.

The pilot units are furnished with full complement of attachments for



Pilot size feeder for plant trials

handling all types of materials. All parts in contact with the material are 304 stainless steel. Bin capacity is 2 1/3 cu ft. Speed of feeder plate may be varied from 0.6 to 14.6 rpm. Unit's 1/2 hp totally enclosed motor may be plugged into any 110-volt, 60-cycle circuit.

(Announced by manufacturer of the Com-Bin, the Pulva Corporation, Dept. CP, 555 High St., Perth Amboy, N. J. . . . or for more information check CP 3563 on handy form, pages 2 and 3.)

Huge vinyl calender being set up

A 28 by 66", four-roll vinyl calender is being installed in U. S. Rubber's Mishawaka, Ind., plant for increased production of the company's Elastic Naugahyde plastic upholstery. Unit is said to be one of the country's largest and most modern.

(United States Rubber Company, Dept. CP, Rockefeller Center, 1230 Avenue of the Americas, New York 20, N. Y.)

SPERRY HAS THE ANSWERS

—Whatever Your
Filtration Problems
May Be . . .

During a half century of designing filter presses for America's manufacturing companies, Sperry has solved nearly every known type of industrial filtration problem. Sperry Filter Presses are flexible in size and design . . . there is a complete range of filter bases . . . and a choice of six different closing devices.

Send for the Sperry Filter Press catalog and you'll see why Sperry can solve *your* filtration problems efficiently and economically.

D. R. SPERRY & CO.

Batavia, Illinois

Filtration Engineers for More Than 60 Years

Eastern Sales Representative:

George Tarbox,
808 Nepperhan Ave.,
Yonkers 3, N. Y.
Yonkers 5-8400

Western Sales Representative:

B. M. Pilhashy,
833 Merchants Exchange
San Francisco, 4, California
DO 2-0375



When inquiring check CP 3564 on handy form, pgs. 2-3

SMOOTH—VIBRATIONLESS PROPELLERS

for MIXING, STIRRING
AERATING, PUMPING, etc.

Manufactured by an exclusive process, MICHIGAN propellers are perfectly balanced to avoid whip and strain on shafts. And because of their superior functioning are now standard parts of the products of many leading equipment manufacturers.

Available for special application and replacement, as well as original equipment, in a wide variety of metals and in sizes up to 40". Write for latest data folder.



Side Entering Mixer by
EASTERN INDUSTRIES
NEW HAVEN, CONN.

MICHIGAN WHEEL CO.

GRAND RAPIDS 3, MICH.

When inquiring check CP 3565 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Plastic coat protects surfaces of fume and dust washer from corrosion, wear . . .

easily dismantled tower is supplied to lab or plant in two sizes — 750 and 1650 cfm

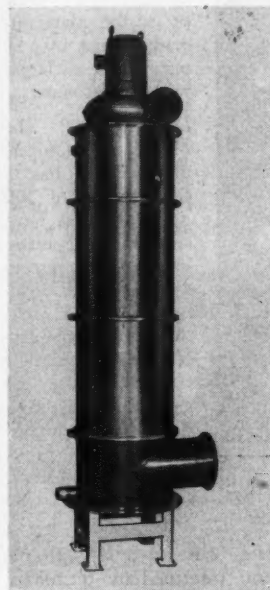
Uses: Washing noxious or corrosive fumes from air in plants and laboratories. Fume washer may be utilized to remove dusts when the packing operation is omitted.

Features: Simple construction makes for light weight and use-flexibility. Tower is easily and quickly dismantled and reassembled, so that it can be conveniently used at different points within the plant or lab. A 1/16" coating of Tygoflex plastic

protects all metal surfaces, inside and out, from corrosion and abrasion. This plastic makes an airtight seal between the tower section flanges, so that no supplementary gaskets are needed (other than taping the edges of the flanges with a plastic tape supplied with the unit).

Description:

Fume washer consists of a metal support stand; a bottom section containing packing support plate, liquor drain pipe and fume intake duct; one, two or more packed intermediate sections; a distributor section with water inlet; and a top section



Packed fume washer

containing the exhaust fan, drive motor, and washed air exhaust duct.

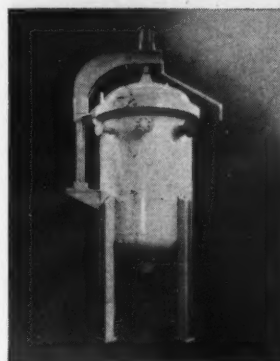
Two sizes are available: 750 and 1650 cfm. The first has a 20" tower diameter, is 8'5" high with two intermediate packed sections, and is powered with a 1-hp, 60-cycle, 220/440-volt, 3-phase motor. The 1650-cfm model has a 30" diameter, is 9'7" tall with two intermediate sections, and is powered with a 2-hp motor. Tower sections are made of hot-rolled sheet steel (16-gage on 20" tower and 18 on 30"), with 1" spun flanges locked together with split ring clamps.

Use of Intalox saddle tower packing contributes much to the small size yet high efficiency of the washer. Packing has a high degree of randomness and large surface area. Pressure drop of the unit is reported low.

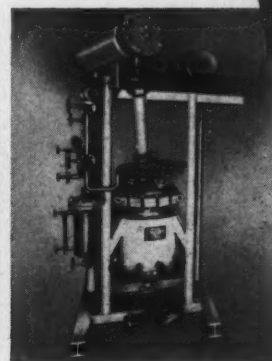
(Fume washer is made by Process Equipment Division, U. S. Stoneware Company, 5300 Tallmadge Ave., Akron, Ohio . . . or for more information check CP 3566 on convenient Reader Service slip between pages two and three.)

Standard or Special Large or Small...

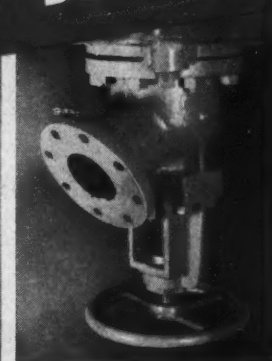
BLAW-KNOX BUILDS THEM ALL!



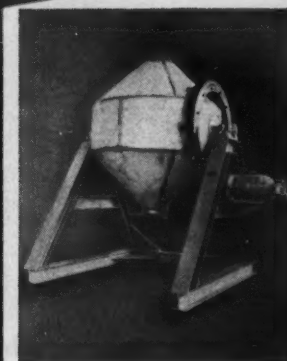
Special Vertical Autoclave for curing safety glass.



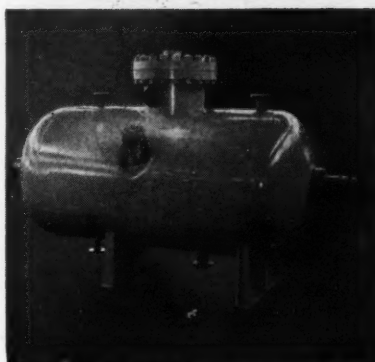
Electro-Vapor® Heated Resin Pilot Plant



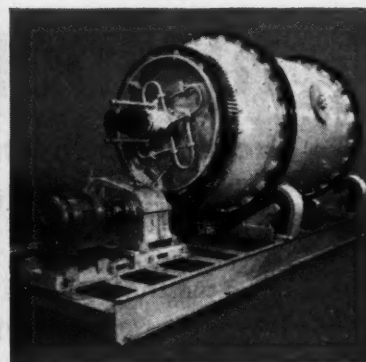
Flush Type Plug Valve



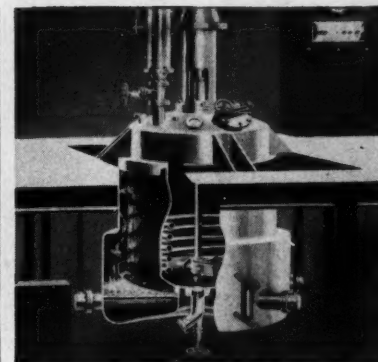
Stainless steel Granulation Blender



Horizontal Jacketed Autoclave with helical type agitation.



Jacketed Rotary Carbonator



Cut-away view of Electro-Vapor® heated Reaction Kettle.

Do you need a 1/2-gallon laboratory autoclave? Or a commercial unit of several hundred gallons capacity? Blaw-Knox has the extensive manufacturing facilities and engineering experience to furnish processing equipment which will meet your requirements in every respect. In addition to standard units we also fabricate special equipment to specifications. For further information write for Bulletin 2413.

EQUIPMENT FOR:

Distillation • Cracking • Gas Cleaning • Solvent Extraction • Solvent Recovery • Heat Transfer • Gas Absorption • Polymerizing • Evaporation • Crystallization • High Pressure Processing • Impregnating and other processes

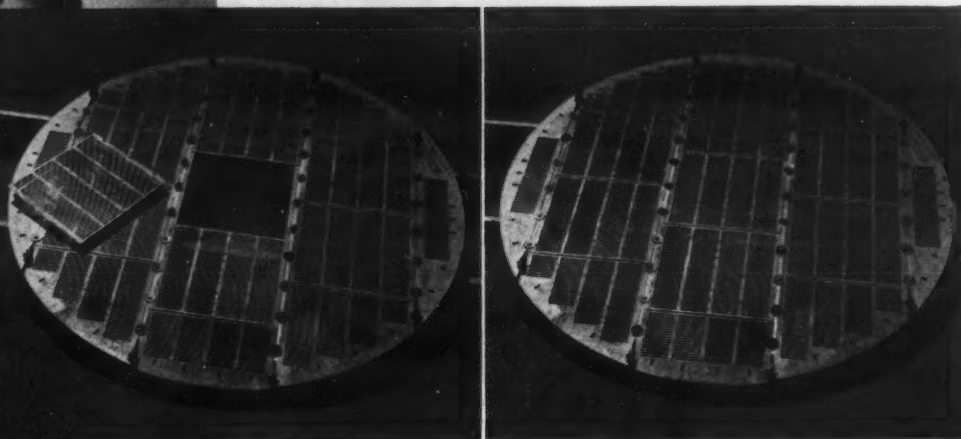
BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
PROCESS EQUIPMENT DEPARTMENT
Pittsburgh 22, Pa.

BLAW-KNOX

When inquiring check CP 3567 on handy form, pgs. 2-3



Signal Advance!



Photos courtesy Fritz W. Glitsch & Sons, Inc.

TURBOGRID...

**the distillation tray that makes
the bubble-cap tray obsolete**

50 Turbogrid columns in service and as many more under construction prove that—

Turbogrids save money and really deliver
Turbogrid trays save as much as 50% of the cost of new column construction.

At nominal cost, tray *replacement* with Turbogrids may even double the capacity of an existing column . . . without loss in product separation.

Ease of control and lower maintenance costs pay additional dividends.

Turbogrids are available from accredited contractors. We invite your inquiries.

Visit us at the San Francisco AIChE meeting in September.

**SHELL
DEVELOPMENT
COMPANY**

50 WEST 50TH STREET • NEW YORK 20, NEW YORK



When inquiring check CP 3568 on handy form, pgs. 2-3

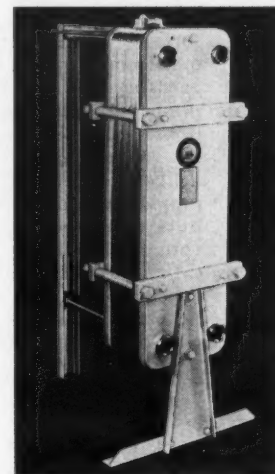
PROCESSING EQUIPMENT

Smaller heat exchanger model costs less than standard . . .

but it uses same stainless steel plates, so they can be switched to larger unit if necessary

Uses: Low-capacity plate-type heat exchanger is for continuous heating or cooling of liquid chemical and food products. Particularly recommended for applications which require only infrequent opening of the unit.

Features: Less expensive version of manufacturer's standard Superplate Press, but uses the same stainless steel plates. Therefore, when capacity must be increased beyond that which can be handled by the small press, the plates already in use may be put into a larger press replacement.



Low-capacity plate-type
heat exchanger

Description: The Model SI-30 Superplate Press has a capacity up to 500 gph. Plates have a surface of many knobs which create turbulence and thereby assure fast heat transfer. Each plate is made of stainless steel (as are all surfaces contacting product), is stamped out of one piece, and has no welds or corners to catch and hold dirt.

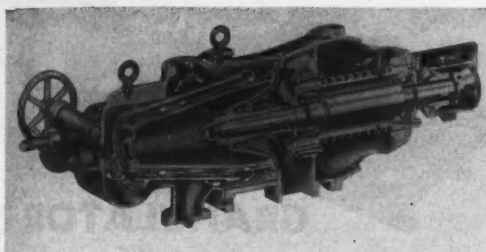
A maximum of 30 plates can be used with the press when there are no intermediate terminals, and as many as 19 plates when an intermediate terminal is required. Exterior surfaces have a zinc metallized finish further protected by paint. Overall length is less than 3'; height is less than 5'.

(Product of Dept. AS-3, Cherry-Burrell Corporation, Dept. CP, 427 W. Randolph St., Chicago 6, Ill. . . . or for more information check CP 3569 on handy form, pages 2 and 3.)

Add jordaning machine to line of pulpers, beaters

A space-saving unit for jordaning paper stock just before a paper machine has just been announced as an addition to an existing line of pulping and beating machines. Intended to supplement or replace jordaning equipment in a mill, the machine has an overall length of 93", width 39", and height 36". Center-to-center spacing of multi-unit installations can be about 60". Shell and rotor fillings are one-piece alloy castings, with no loose bars. All fillings normally have same size and arrangement of bars.

Motors are direct-connected, and are usually 150-hp, 900-rpm for 60-cycle current, and 750-rpm for 50-

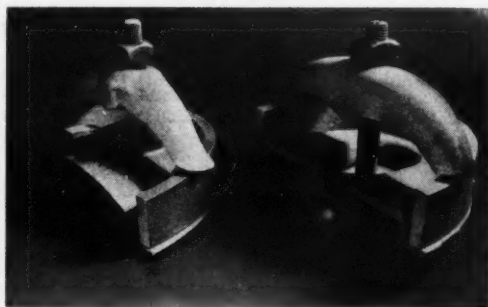


Arrows indicate flow of stock through jordaning unit

cycle current. No special starting characteristics are required. Operating power is usually 20 to 25% under rating of motor hp.

(Stuff-Maker is made by Morden Machines Company, Dept. CP, Corbett Building, Portland 4, Ore. . . or for more information check CP 3570 on handy form, pages 2 and 3.)

Working pressures up 20-30% for elliptical manhole fitting



Because of their elliptical shape, newly developed manhole fitting (pictured at left) is reported to withstand 20 to 30% greater working pressure than conventional type (at right). A 12 by 16" heavy-duty model withstands 1000 lb wp, while 12 x 16" and 11 x 15" models withstand up to 600 lb.

(Developed by Lukens Steel Company, Dept. CP, Coatesville, Pa.)

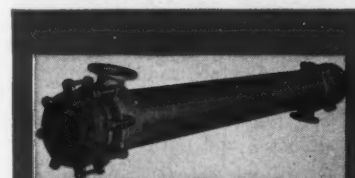
Reveals facilities for design of fertilizer plants

Two-color, six-page bulletin discusses the advantages of engaging a "specialist" engineering firm for designing wet-process fertilizer plants. Issuing company's qualifications and facilities are covered briefly, along with descriptions of processes and systems the company developed, typical flowsheets, and photos and plant descriptions of a number of recent projects.

Bul 8000 is issued by The Dorr Company, Inc., Dept. CP, Barry Place, Stamford, Conn. When inquiring specify CP 3571, pages 2 and 3.

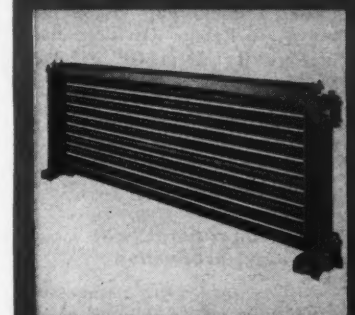
...A CONSTANTLY IMPROVING LINE

Specify "National" Carbon and Graphite and "Karbate" Impervious Graphite Equipment for Processing, Conveying and Storing Corrosive Fluids.



Wide variety of standard and custom-built models in time-proved designs. Shell and tube, concentric and immersion types available in stock sizes. Catalog Sections S-6620, S-6670, S-6740, S-6750.

Accepted material for lining tanks, towers, digesters and other vessels containing corrosive chemicals. Catalog Section S-6210.



New "Karbate" coolers feature standardized, sectional construction . . . high heat-transfer rate . . . low initial cost. Catalog Section S-6820.

The pumps for corrosive service. Improved designs in heavy-duty and motor-mounted types; numerous sizes, models. Catalog Section S-7250.

The terms "National" and "Karbate" are registered trade-marks of Union Carbide and Carbon Corporation

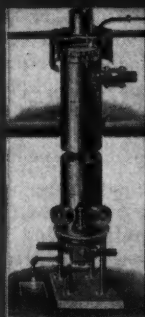
NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation

30 East 42nd Street, New York 17, N. Y.

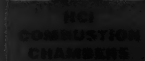
District Sales Offices:

Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

In Canada: National Carbon Limited, Montreal, Toronto, Winnipeg

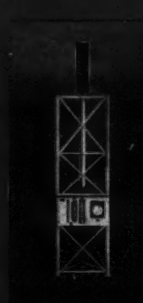


Vertical, standard equipment for hydrogen chloride synthesis. Corrosion resistant. Simple in operation. Catalog Section S-7530.



COMBUSTION CHAMBER

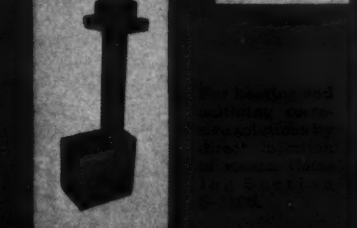
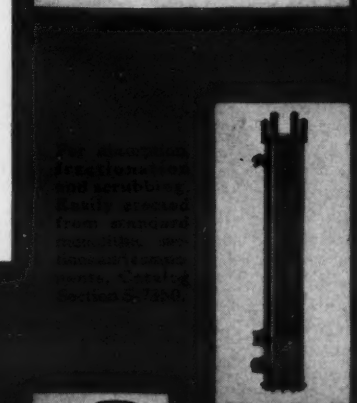
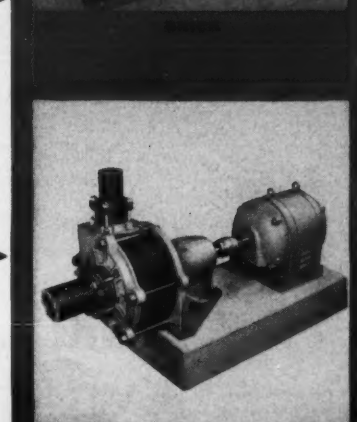
Standard and custom-built models to meet any hydrochloric acid production requirement. Catalog Section S-7430.



STORAGE TANK



CONVEYOR SYSTEM



SCRUBBER

When inquiring check CP 3572 on handy form, pgs. 2-3

only strong arm methods survive these tests

Readco Double Arm Mixers are producing hundreds of tons of heavy, abrasive, welding rod coatings each year at the Alloy Rods Company, the world's leading manufacturer of alloy arc welding electrodes.

These sturdy mixers break down the entire mass with each rotation. They produce a homogeneous mix in a short cycle and eliminate peak loads.

Read Standard builds mixers and materials handling equipment for the chemical processing industries.

Photograph courtesy
Alloy Rods Company,
York, Pennsylvania

READ STANDARD
CORPORATION

Bakery-Chemical Division: York, Pennsylvania — Los Angeles 39, California

When inquiring check CP 3573 on handy form, pgs. 2-3

PROCESSING

Chromatographic cuts go commercial in plastic column

According to a recent announcement, a transparent ion exchange unit originally introduced for water purification and lab investigation has been adapted for chromatographic separation on a commercial scale. Several manufacturers are reported to be using the units for separation of rare earths, sugars, antibiotics and other materials.

The acrylic plastic columns are made in diameters of 3½ and 6", with heights as specified by user.

(The "Chromo Pup" is supplied by "Pup" Reactor Division, Enley Products Inc., Dept. CP, 252 Pearl St., New York 38, N. Y. . . or for more information check CP 3574 on handy Reader Service slip between pages two and three.)

Report on radiant heat and vinyl production

High-speed fusing, embossing, and laminating of vinyl materials by means of far-infrared electric heat are subject of 10-page folder.

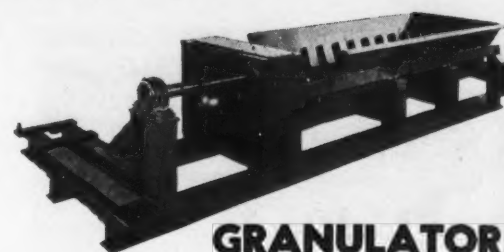
Report tells how cast vinyl can be fused in 10 sec — at belt speeds up to 100 yd per min. Proper speeds and temperature settings are suggested for plastisol and organisol materials, in cast or calendered forms, with supported or unsupported films.

Several applications show how manufacturer's radiant heaters help save factory space and increase production. Advantages of using far-infrared radiation are described and illustrated by a graph. Technical data and specifications of radiant heater are also included.

"The Vinyl Report" will be issued on letterhead request to the Edward L. Wiegand Company, Department CP, 7500 Thomas Boulevard, Pittsburgh 8, Pennsylvania.

For fast sizing of pumps —
nomograph, page 228.

What is a



GRANULATOR?

A Chambers Granulator:

1. Receives bulky, hard-to-feed materials;
2. Delivers a granulated product of even, well mixed consistency;
3. Carries many overhead tons of dumped loads;
4. Generates an even feed for continuous processes — manufactured in capacities up to 100 tons per hour; and
5. Mixes (pugs) multiple materials — wet or dry.

These features, according to your purpose, are also provided by Chambers Pug Mills in a wide variety of sizes.

CHAMBERS BROTHERS COMPANY

52nd & Media Sts.

PHILADELPHIA 31, PA.

Manufacturers of

SPECIAL EXTRUDING MACHINERY

When inquiring check CP 3575 on handy form, pgs. 2-3

FILTER YOUR SOLUTIONS

50-1500 GAL/HR

Filter
Pump
LSI-10

SERVICE: Filters practically any acid or alkaline solution from pH 0 to pH 14; removes particles down to one micron in size. Strainer stops metallic objects.

DESIGN: Filter Assembly fabricated of stainless steel 316, high temperature lucite, rubber-lined, Havg or Sotherin* resin. Filter tubes of cotton, dynel, porous stone, or porous carbon. Pumps fabricated of Hastelloy, stainless 316, or plastic; centrifugal or self-priming. Motors drip-proof, totally enclosed, or explosion-proof, 110 or 220 volt, single or three-phase, 50 or 60 cycle, sleeve or ball bearing. Hose—12 ft. inlet and 12 ft. outlet, acid and alkaline resistant. Base—Phenolic base on rubber tire ball bearing casters.

Model	Rated Capacity	Overall Size	Weight
LSI-5	50 gal/hr	11" x 14" x 12"	30 lb
LSI-10	100 gal/hr	12" x 16" x 16"	40 lb
ASI-300	300 gal/hr	2' x 2' x 2'	125 lb
ASI-400	400 gal/hr	2' x 2' x 2'	135 lb
ASI-600	600 gal/hr	2' x 2' x 2'	150 lb
RLS-1200	1200 gal/hr	2' x 3' x 3'	350 lb

Write for Literature
72-76 Willoughby St.,
Brooklyn 1, New York

Sethco

When inquiring check CP 3576 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Application of moisture to paper just before it's calendered means less handling . . .

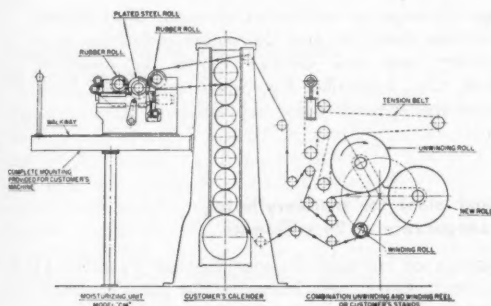
unit mounted on calendering machine offers additional advantage of less web handling

Uses: In making, as a means for eliminating separate operations required to add moisture to sheet about to be calendered.

Features: Mounted on upper portions of calender frames and driven by top calender roll, moisture applicator does work then and there rather than elsewhere on the floor as a separate operation. In short, this means "in-line" moisture application and calendering.

Unit offers the additional advantage of less web handling, hence less chance of web breaks and subsequent waste. It can be placed into operation with no sacrifice to calender speeds and is readily accessible for threading and quick cleanup.

Description: Designed for actual production speeds of 1000 fpm on a 25 lb sulfite sheet, this compact 3-roll self-contained unit is capable of supplying controlled moisture between 9 to 11%



Schematic shows how moisturizing unit (at left) is mounted in relation to calender

maximum, down to as low as 3% minimum; maintaining a tolerance of $\frac{1}{2}$ of 1%. Machine is also capable of maintaining less than $\frac{1}{2}$ % variation across full 52" web for which it was designed.

(Controlled "In-line" Moisture Applicator is built by Dilts Machine Works, Div. of The Black-Clawson Co., Dept. CP, Fulton, N. Y. . . or for more information check CP 3577 on handy form, pages 2 & 3.)

Explains operation of automatic softener

Four-page, 2-color bulletin describes design and operation of automatic water softener which is equipped with pilot-operated, diaphragm type hydraulic valves. Photographs and drawing reveal how compact control panel works pilot valves which, in turn, open and close the main valves. Control system can be installed on existing softeners to make them automatic.

Bul 612 may be obtained on letterhead request to Elgin Softener Corp., Dept. CP, Elgin, Ill.



Here's one of the Chemical Industry's largest distillation columns

THIS GIANT COLUMN is one example of how Pfaudler is prepared to meet your specialized needs for distillation, fractionating and stripping columns, and for bleaching and absorption towers.

The column shown above is one of the largest ever constructed for chemical service. Its one-piece construction measures 77 feet by 54 inches. The first two thirds are of stainless steel with one third carbon steel. It is equipped with 40 sieve trays.

CUSTOM DESIGN

If you have your own design group, we can meet your most exacting

specifications. Or, we will be glad to undertake the complete process engineering—or any phase of it including Turbogrid trays as well as bubble cap, packed and other standard types—to meet your desired end product requirements.

WIDE RANGE OF ALLOYS

To assure maximum service life for your equipment, Pfaudler offers a complete range of corrosion resistant materials. It includes stainless steel, hastelloy, monel, nickel, inconel, aluminum, carbon steel and clad materials. And to meet special corrosion problems at low cost, Pfaudler is prepared to heat treat stainless

steel equipment in automatically controlled furnaces.

PROCESS KNOW-HOW

From years of specialized contact with such basic industries as chemicals, pharmaceuticals, petrochemicals, food, dairy, beverage, and others, Pfaudler engineers are able to keep pace with improvements in all the process industries . . . and translate this broad experience into economical, soundly-engineered recommendations for your process equipment.

Write today for full details on the complete Pfaudler line of chemical processing equipment.

THE PFAUDLER CO.



ROCHESTER 3, N. Y.

GLASSED STEEL • HASTELLOY • ALUMINUM • CARBON STEEL • SOLID OR CLAD STAINLESS STEEL • NICKEL • INCONEL • MONEL

When inquiring check CP 3578 on handy form, pgs. 2-3

LIFTS THE LID ON A LOCOMOTIVE



STACKS FRAGILE GLASSWARE

**Yale Electric Trucks give safe handling
... cut costs as much as 75%**

DIFFERENT LOADS call for different equipment—and the comprehensive YALE line offers exactly the truck your job requires, whatever your business may be.

Because YALE Trucks offer these special features: Hypoid Gears, Involute Spline Drive Shafts, and Yale Lift Channels, users report costs reduced as much as 75%.

YALE's wide variety of models includes Gas, Diesel, LP-Gas, Gas-Electric, and Electric in capacities up to 100,000 lbs. Attachments available for specialized handling jobs.

YALE*

MATERIALS HANDLING EQUIPMENT

*Registered in U. S. Patent Office

MAIL THIS COUPON TODAY

The **YALE & TOWNE** Manufacturing Co., Dept. 129
Roosevelt Blvd. and Haldeman Ave., Phila. 15, Pa.

Please send my free copy of *Picture Story of
Yale Materials Handling Equipment.*

Company _____

Name _____ Title _____

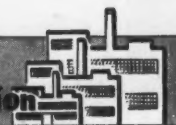
Street _____ City _____ State _____

In Canada write: The Yale & Towne Mfg. Co., St. Catharines, Ontario, Canada

**Gas, Electric, Diesel Lift Trucks • Worksavers • Hand Trucks
Hand and Electric Hoists • Pul-Lifts**

When inquiring check CP 3579 on handy form, pgs. 2-3

Expanding Chemical Production



Oil will flow through 8" line from Sarnia to Toronto

Completion of an 8" pipe line that will carry oil from Sarnia, Ont., to Toronto is expected by Oct. 1st — the same time Sun Oil Company's new refinery at Sarnia gets on-line.

The 200-mile, \$6 million project, which will also carry oil from Canadian Oil Companies, Ltd. refinery at Sarnia, will have an initial maximum capacity of 17,500 bpd from a single pumping station at Sarnia. With additional pumping stations, maximum ultimate pumping capacity will be 35,000 bpd. The pipe line is an outcome of the recently-formed Sun-Canadian Pipe Line Company, Ltd.

Begin potassium carbonate unit, set deadline for 1954

Construction has begun on a new potassium carbonate plant in the village of Solvay, N. Y. by the Solvay Process Div., Allied Chemical & Dye Corp. Cost of the new installation, expected to be completed in the first quarter of next year, will be in excess of \$2 million. Liquid, calcined, and hydrated grades will be produced.

Slate \$2 million plant facilities for chlorinated methane

Plans for construction of a \$2 million plant for production of chlorinated methane products near Moundsville, W. Va., have been announced by the Solvay Process Div., Allied Chemical & Dye Corp. Construction is expected to be completed in about ten months.

The new plant will have facilities for producing methylene chloride, methyl chloride, chloroform, and carbon tetrachloride.

Largest globulin-albumin process plant now on-line in Midwest

Armour & Company's new human blood fractionation plant at the firm's pharmaceutical center in Kankakee, Ill., largest installation of its kind, is now in operation.

The plant has a capacity of 78,000 500-cc bleedings a month, from which it can produce about 40,000 10-cc vials of poliomyelitis-immune gamma globulin and about 16,000 100-cc units of serum

albumin. The blood is collected from citizen volunteers throughout the Middle West.

All globulin produced is turned over to the Office of Defense Mobilization for free distribution to physicians to be used in polio areas according to ODM rules. None is sold in normal commercial channels. The plant will also manufacture other Armour Laboratories pharmaceutical specialities.

More activated alumina available for chemical industry

Large tonnages of activated alumina, used primarily in the chemical and petroleum industries as a dessicant, are now being offered by Reynolds Metals, Co., Louisville, Ky., which enters the business as the second major supplier.

Expand plant for pentaerythritol, set annual rate at 24 million lb

Expansion of Hercules Powder Company's plant at Mansfield, Mass., will increase the plant's output of pentaerythritol from 18 million lb annually to 24 million lb when the new facilities are completed by the end of this year. This move will make the company one of the world's largest producers of the product used in the paint and varnish industry. Some of the increased production will be available by the end of the summer.

Phenolic resins plant now on line, Monsanto's 3rd in year

Monsanto Chemical Company has announced its third expansion of phenolic resin production in less than a year — installation of a third production line at Port Plastics, Ohio, and higher capacity equipment at its Springfield, Mass. plant.

Vitamin concentrate from sewage, pilot plant planned

Vern E. Alden Company, Engineers, Chicago, has entered into an agreement with the Milwaukee, Wis., Sewerage Commission for production of Vitamin B-12 concentrate from dried and disinfected sludge taken from the city's sewage disposal plant.

Product, called Milorganite, is used against pernicious anemia and has important influence on growth.

Pilot plant now being built in the Chicago area for study of vitamin concentrate extraction will be operated for first three months so that a market survey can be made. After one year, results of the pilot plant operation will determine whether or not the company will go ahead with plans for a \$1 million concentrate plant at Jones Island at the mouth of the Milwaukee River. If constructed, the plant would have an annual processing capacity of 70,000 tons of fertilizers which would yield approximately 140 kgm of pure Vitamin B-12 activity the Chicago firm estimates.

Plan wood preserving unit on New York site

Koppers Company, Inc. is planning construction of a wood preserving unit on an 80-acre site at Horseheads, N. Y.

Minnesota M. & M. Co. gets assets of American Lava

Acquisition of American Lava Corp. by Minnesota Mining and Manufacturing Co. through a \$5 million stock transfer has been announced. The deal, now in effect, makes the Chattanooga firm a wholly-owned 3M subsidiary and makes 3M the world's largest producer of flexible electrical insulating materials. No changes are reported either in American Lava's management group or in its operating policies.

Du Pont begins concerted program for producing cellophane

A modernization program for improvement of cellophane manufacturing facilities at Du Pont Company's Clinton, Iowa plant is now underway and is scheduled for completion by the end of 1954.

Natural gas piped from Panhandle has new outlet in Illinois

Processing of natural gas has begun at the National Petro-Chemicals Corp. \$44 million project at Tuscola, Ill., reported to have the world's largest units for recovery of hydrocarbons. Natural gas for the processing comes from the Panhandle Eastern Pipeline Company's line.

When operating at full capacity, the plant will process 400 million cu ft daily of natural gas liquids. In addition, 10 million cu ft per day of methane will be recovered from the natural gas for conversion into ethylene for units nearly ready for production.

FROM



CETANILIDE

TO



INC OXIDE

**THERE ARE MORE PRODUCTS DRIED
COMMERCIALY IN PROCTOR SYSTEMS
EVERY DAY THAN ANY OTHER WAY**

AND HERE ARE THE REASONS...

Proctor & Schwartz has earned the right to be called into the solution of more drying problems because every single piece of Proctor equipment that goes into operation does so with a written guarantee. It is a guarantee that stands up because it is based on Proctor engineers' thorough analysis of the problem—their comprehensive knowledge of sound dryer design—and their reputation for installing systems that perform to guaranteed specifications.

The background on which Proctor engineers draw when working on a drying problem covers a longer period of time (70 years) ... and a wider range of products than can be found anywhere else in the world.

Proctor engineers' experience is not limited

to working with any one type of drying system or equipment—it includes hundreds of commercial installations of tray dryers ... truck-tray dryers ... continuous conveyor drying systems with pre-forming feeds for heavy chemicals (a Proctor innovation) ... and infra-red freeze drying equipment for delicate, heat sensitive chemicals and biologicals.

Recently Proctor service has been broadened to include spray drying ... but not until experienced personnel were added to the Proctor staff.

When you have a drying problem—call Proctor engineers in confidence. They'll bring to bear their vast commercial experience to speed its solution ... and then they'll guarantee the performance of the system they install. This approach can't be matched!

PROCTOR & SCHWARTZ • INC •

PHILADELPHIA 20, PA.

The World's First Name In Industrial

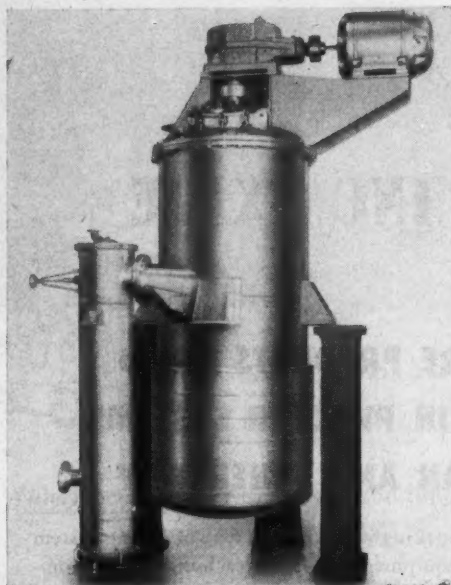
Drying Equipment and Processing Machinery

TRAY DRYERS • TRUCK DRYERS • CONTINUOUS CONVEYOR SYSTEMS
PRE-FORMING FEEDS • INFRA-RED FREEZE DRYING SYSTEMS • SPRAY DRYING •

When inquiring check CP 3580 on handy form, pgs. 2-3

BUFLOVAK

can help you solve
processing problems —
at a PROFIT



A special BUFLOVAK Evaporator-Still which combines two processes into one.

BUFLOVAK has helped another nationally-known manufacturer produce a better product at lower cost by combining two processes into one. That, of course, means greater profits!

A valuable, dilute, heat-sensitive solution is carried to high concentration in a single, compact unit. Ordinarily a two stage process would be required.

Special equipment was engineered for the job. A low-temperature, sanitary evaporator steam-chest and a high vacuum processing kettle equipped with an agitator and selectable heating surfaces, were combined into a single, integral unit.

Through the combined facilities of our Research and Testing Laboratories, coupled with extensive field experience, BUFLOVAK Engineers design processing equipment for the most profitable results.

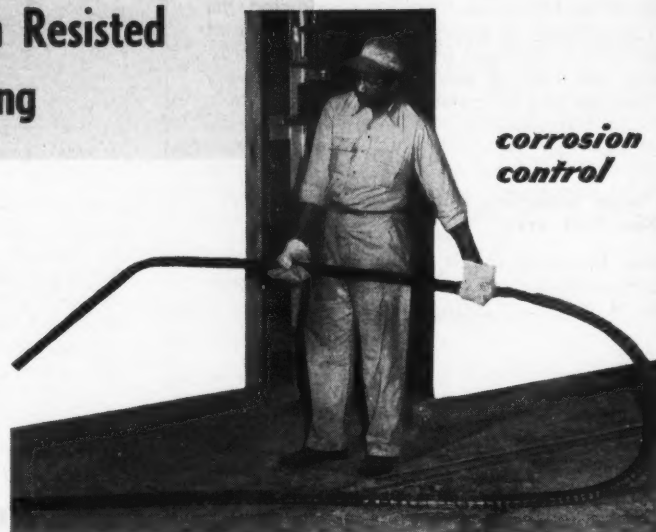
BUFLOVAK Catalogs have a wealth of valuable information on drying, evaporation and processing. A request on your company letterhead will bring copies to you.

BLAW-KNOX COMPANY

BUFLOVAK EQUIPMENT DIVISION
1645 Fillmore Ave. Buffalo 11, N.Y.

Chlorine Gas and Molten Aluminum Resisted by Ceramic Coating

Temperatures up to 2000°F withstood by porcelain enamel on black steel pipes used for fluxing and degassing aluminum alloys, while service life is lengthened by 12 to 20 times



*corrosion
control*

This photograph illustrates procedure used for fluxing and degassing aluminum alloys. Operator holds ceramic coated pipe as shown while poking it through a hole in the furnace containing the molten aluminum. End of the pipe, after the bend, is placed near the bottom of the metal in the bath. Chlorine flows through the pipe and bubbles up through the aluminum. Porcelain enamel coating of the black steel pipe is estimated to have saved more than 2 million lb of metal in 18 months

PROBLEM: Three years ago at the Listerhill, Alabama plant of Reynolds Metals Co., black steel pipes used in a chlorine fluxing operation had a service life of only eight to ten minutes. The bent pipe, similar to that shown in accompanying photograph, is held by the operator while it is poked through a hole in a furnace containing the molten aluminum. The end of the pipe, after the bend, is placed near the bottom of the molten metal. Chlorine gas then flows through the pipe and bubbles up through the aluminum.

The high mortality rate of the pipes was attributed to the effects of the chlorine gas and molten aluminum at high temperatures. Although the temperature of the interior of the molten aluminum ranged from 1250 to 1350°F, the surface temperature of the bath frequently reached 2000°F. Also, some contamination of the alloy resulted when black steel pipe and chlorine gas were combined at high temperatures.

Since the cost of the pipe was a disproportionate part of the whole operation, some method of extending its life was required. Black steel pipe was considered the only practical metal that could be used during the high temperature fluxing operations. For that reason, it was considered that the

solution might perhaps be found in coating the piping with porcelain enamel.

Solution: Work was undertaken to find an enamel that would successfully resist the corrosive conditions and high temperature. It was also necessary to develop a satisfactory method of coating the pipe with ceramic on both the inside and outside.

In initial tests the regular high temperature resistant enamels, such as those developed for use in jet airplane parts, failed because of their inability to resist corrosion caused by molten aluminum. In addition, their fusing temperatures are so high that commercial enameling production equipment is not generally encountered in their firing ranges.

To defeat this problem, it was decided to add various refractory materials to high corrosion resistant coatings so that the resistance of the coating to heat would be increased. Also, the charac-

ter of some finishes with high heat resistance was altered so that they would have improved corrosion resistance. Best results were finally achieved however, by starting out with a corrosion resistant finish and altering it to add high temperature resistance.

The next problem was to find a satisfactory method of coating the interior of the pipe. It was difficult to keep the liquid enamel, called *slip*, from washing off. After trying other methods, this problem was solved by sealing one end of the pipe, allowing the slip to fill the upright pipe, and later run off slowly. After the pipe was coated, it was fired at temperatures of 1300 to 1900°F. This initial coating supplies the bond between the metal and one of several additional coats. The finish coat is applied in the same way as the bonding coat. After the ceramic coating is completed, the bend is made in the pipe.

Results: The porcelain enamel coated black lined steel pipe has been found to resist the chlorine gas and molten aluminum for an average time of approximately 148 minutes. Comparing this period with the eight to ten minutes life expectancy of the uncoated pipe, the service life has been increased by 12 to 20 times. Since the coated pipe costs about five times as much as plain pipes, the monetary savings are obvious. Aggregate saving of black steel pipe alone in 18 months of application of the process has been more than two million pounds.

It is believed that additional savings of black steel pipe are possible with the use of other, more expensive enamel coatings. However, the additional manufacturing costs, in view of the fact that rough plant handling of the pipes frequently results in a high breakage ratio, do not seem to be warranted.

In addition to the savings achieved, use of the porcelain enamel coated pipe has eliminated the contamination of the aluminum alloy through the dissolving of the iron.

(Development of Barrows Porcelain Enamel Co., Dept. CP, Langdon Farm Rd. at Pennsylvania R.R., Cincinnati 13, Ohio. . . or for more information check CP 3582 on handy form, pages 2 and 3.)

Perman Basin corrosion tour

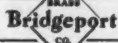
An opportunity to study corrosion control first hand with respect to oil field and refinery equipment will be presented in a corrosion tour to be conducted Sept. 30 to Oct. 2, 1953, incl. Those on the tour will be able to view the effects of corrosion on oil field equipment in place. A complete inspection trip in the Cosden Refinery at Big Spring, Texas will be included. Headquarters for the tour will be the Lincoln Hotel at Odessa, Texas.

(Fee for the tour, which is conducted under the auspices of the National Association of Corrosion Engineers, will be \$17.00. Inquiries for reservations may be made to John A. Knox, The Western Co., Dept. CP, Box 310, Midland, Texas.)

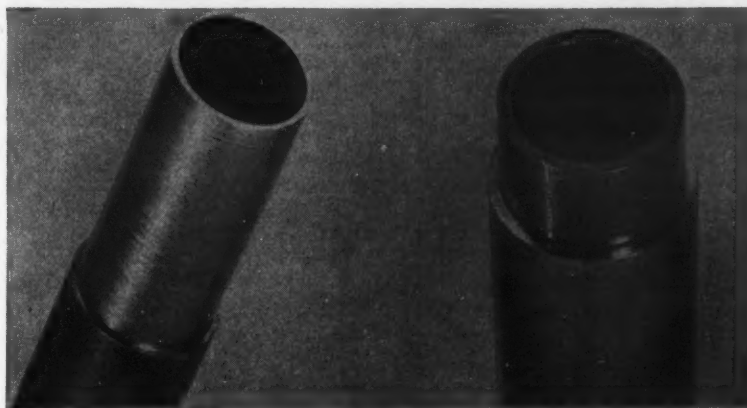
BRIDGEPORT BRASS COMPANY

CONDENSER AND HEAT EXCHANGER TUBE EDITION

COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND. — IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Duplex Tubes are double walled—composed of two different metals specially designed to fight both inside and outside corrosion. For example, in ammonia refrigeration systems, steel to the ammonia side and copper or a copper-base alloy to the water or brine side increases heat transfer rate and extends service life with reduced maintenance.

Improving Ammonia Refrigeration Systems With Duplex Tubing

Since ammonia and similar nitrogen compounds are finding greater applications in refrigeration, synthetic chemical compounds and as liquid fertilizers, it is important that we learn how to handle these corrosive gases and liquids.

Dry ammonia gas is not corrosive to most metals and alloys. However, when ammonia is mixed with water and air (oxygen), it severely attacks copper and copper-base alloys.

On the other hand, steels are very resistant to ammonia corrosion. This explains their wide use in the construction of equipment and heat exchangers for producing and handling ammonia and its compounds. The presence of salts such as ammonium nitrate increases the corrosivity of ammonia towards iron, aluminum, zinc, and cadmium.

Ammonia Refrigeration

Corrosion from the water or brine side has always plagued operators of ammonia refrigeration systems. Steel tubes have long been used with ammonia and are satisfactory in withstanding corrosion from the ammonia side, but on the water side rust quickly builds up a heat insulating layer which

must be removed from time to time at considerable cost. This is now being overcome through the wider use of Duplex tubes composed of low carbon steel to the ammonia side and copper or copper-base alloys, which stand up well, to the water side.

The most popular Duplex tube combinations are low carbon steel outside and copper, Admiralty, or Red Brass inside towards waters from rivers, lakes, ponds, or wells. When sea water is used for cooling purposes, Duplex Tubing with Cupro Nickel, Duralon IV (arsenical aluminum bronze), Aluminum Brass, and Admiralty are popular. Where high water velocities may cause impingement corrosion, the first three mentioned alloys are superior to Admiralty.

Improved Heat Transfer with Lower Maintenance

Mechanical bonding between the two components of Duplex tubes is so tight that very satisfactory heat transfer characteristics result. The designer can use the fouling factor for copper or copper-base alloys rather than the higher value customarily used for steel. Slime, algae, and marine growths have

less tendency to foul copper-base alloys than steel. The use of copper or copper alloys on the water side results in continued high heat transfer characteristics compared to single wall steel tubes whose heat transfer value becomes lower as a thicker insulating coat of rust builds up.

For these reasons smaller size heat exchangers, equipped with Duplex tubes, can be designed to have the same total heat transfer as larger size units with steel tubes. Also, when steel tubes are replaced with Duplex (steel/copper), the improved heat transfer rates result in higher operating efficiency.

An ice company that replaced its steel tubes with Duplex (steel/Admiralty) reported two years later that four semi-annual back-breaking cleanings have been avoided; operating pressures are running 15 to 20 pounds lower; and that their new Duplex tubes have already paid for themselves.

A leak at the tube sheet is dangerous, if not soon corrected, as it may permit sufficient ammonia to contaminate the cooling water or brine, accelerating corrosion of the copper or copper-base alloy component of the Duplex Tubing. Corrosion from contaminated water is most severe at the inlet end of the tubes where turbulence is highest.

Duplex Has Many Advantages

The use of Duplex tubes has increased greatly during recent years because of the following factors:

1. They do an excellent job where a dual corrosion problem is involved.
2. Reduce maintenance, shutdown time and labor.
3. Conserve metals since corrosion rates are greatly reduced.
4. Resist corrosion from untreated and treated waters better than steels.
5. Improve heat transfer characteristics or higher efficiency as compared with single-wall ferrous alloys.

If you have a corrosion problem that is difficult to handle, consult our Corrosion Laboratory. It is quite possible that there is a Duplex Tubing combination which is the answer to your problem. Write for the "Duplex Tubing Technical Bulletin No. 1950." (359)

When inquiring check CP 3583 on handy form, pgs. 2-3

INDEX OF ACP CHEMICALS FOR METAL PRESERVATION AND PAINT PROTECTION

METAL	OPERATION	ACP CHEMICAL
ALUMINUM	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Preparation for Painting	"ALODINE" "DURIDINE" "DEOXIDINE"
	Protection from Corrosion	"ALODINE"
GALVANIZED IRON, ZINC, AND CADMIUM	Cleaning	"DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Corrosion Proofing	"ZINODINE"
	Paint Bonding	"ZINODINE"
	Phosphate Coating, in Preparation for Painting	"LITHOFORM"
	Soldering Flux	"FLOSOL"
STEEL	Chromate Coating, in Preparation for Painting	"CROMODINE"
	Cleaning	"ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "DURIDINE"
	Coating with Copper	"CUPRODINE"
	Drawing and Extrusion	"GRANODRAW"
	Paint Bonding	"CROMODINE" "DURIDINE" "GRANODINE" "PERMADINE" "THERMOIL-GRANODINE"
	Paint Stripping	"CAUSTIC SODA AND SOLVENT NO. 3"
	Phosphate Coating, in Preparation for Painting	"DURIDINE" "GRANODINE" "PERMADINE" "THERMOIL-GRANODINE"
	Phosphate Coating, to Protect Friction Surfaces	"THERMOIL-GRANODINE"
	Pickling with Inhibited Acids	"RODINE"
	Rust Prevention for Unpainted Iron	"PEROLINE"
	Rust Proofing	"PERMADINE" "THERMOIL-GRANODINE"
	Rust Removal—Brush, Dip, or Spray	"DEOXIDINE"
	Soldering Flux	"FLOSOL"

Visit Our Display in

Space 1104

Main Exhibition Hall

Cleveland

Public Auditorium

at the

National Metal Exposition

October 19th - 23rd



AMERICAN CHEMICAL PAINT COMPANY

GENERAL OFFICES: AMBLER, PENNSYLVANIA

Detroit, Michigan Niles, California Windsor, Ontario

CORROSION

Corrosion by nitric acid at elevated pressures and temperatures

Paper covering recent research work at Ohio State University indicates the need for alloy development and inhibitor studies for applications involving very strong nitric acids or nitric acid at elevated temperatures and pressures. Promise of mitigation of corrosion by use of inhibitors was indicated by results of the investigations.

Titanium shows excellent resistance to nitric acid even at high temperatures. High silicon iron shows outstanding resistance of nitric acid at temperatures up to 350°F or higher except for dilute acid where some attack occurs just below boiling at atmospheric pressure and considerable attack at higher temperatures and pressures.

Cost and present limited supply of titanium precludes its use except for special cases. Disadvantage of high silicon iron is its poor resistance to thermal shock and its brittleness.

Other tests indicate zirconium might be suitable for these nitric acid applications, but it, too, is expensive. Improved resistance of CF-8 and CN-7MCu alloys over the CB-30 (18% Cr) indicates that nickel is helpful in improving the corrosion resistance properties of stainless steels at elevated temperatures.

Comparison of data obtained shows that higher corrosion rates were obtained for autoclave specimens tested at higher pressures than atmospheric. It is believed that nitrous acid formed is responsible for at least part of the increased corrosion. A better knowledge of the properties of nitric acid and its decomposition products would help in studying the inhibitor problem or in designing an alloy which would be suitable for elevated temperatures and pressure applications.

(Information obtained from paper on research work instigated by Alloy Casting Institute. The paper, "Corrosion by Aqueous Solutions at Elevated Temperatures and Pressures," is by F. H. Beck and M. G. Fontana, Ohio State University, Dept. CP, Columbus, Ohio. It was presented at National Association of Corrosion Engineers Conference and Exhibition which was held in Chicago, Illinois.)

AGILENE **AGILIDE**

The Most Economical Answer

TO YOUR CORROSION PROBLEMS IN CHEMICAL PROCESS EQUIPMENT

Agile's high-grade thermoplastic construction materials—AGILENE and AGILIDE—fabricated by a combination of forming and welding processes in which we specialize, are your safeguard for an economical and properly engineered fabrication or installation.



Self-supporting acid make-up tank fabricated entirely from AGILIDE (non-plasticized polyvinyl chloride) complete with sightglass, valves and shut-off spigot. It measures 24" diameter by 30" high with 1/4" wall thickness. It was fabricated for American Cyanamid, Stamford, Conn., by the hot gas welding process. These tanks can be furnished in any size to your specifications.

SEND YOUR INQUIRIES TO

American Agile Corporation

Plant and General Offices • 5461 Durham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT. C-1

When inquiring check CP 3585 on handy form, pgs. 2-3

When inquiring check CP 3584 on handy form, pgs. 2-3

**Chemical resistance furnished
by easy-to-apply epoxy
resin coatings . . .**

also withstand abrasion, exhibit good qualities of adhesion, flexibility, and toughness

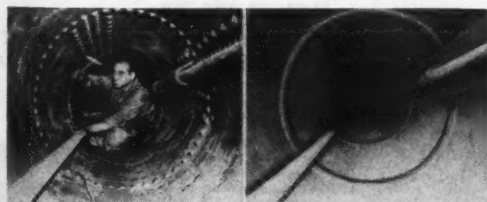
Epoxy type coatings formulated to provide maximum chemical resistance to many of the corrosive conditions found in industry are available in an easy-to-apply form. They can be supplied in either air dry or baked finishes to suit available facilities.

Outstanding qualities of adhesion, flexibility, chemical and solvent resistance, toughness, and abrasion resistance are exhibited by the epoxy resin coatings, according to manufacturer. They can be applied without primer on ferrous and non-ferrous metals, wood, concrete, and paper. Application may be by brush, dip, or spray. Coverage of a brush coat averaging 4 to 6 mils per coat is approximately 300 to 400 sq ft per gallon. Standard colors are pigmented white, pigmented gray, clear transparent. Tints and full-tone colors are available on special order.

(Product of Connecticut Coatings, Inc., Dept. CP, 45 E. Putman Ave., Greenwich, Conn. . . or reader may secure more information by simply checking CP 3586 on handy Reader Service slip between pages two and three.)

**Corrosion protection for tanks
and hot water generators
provided by lining**

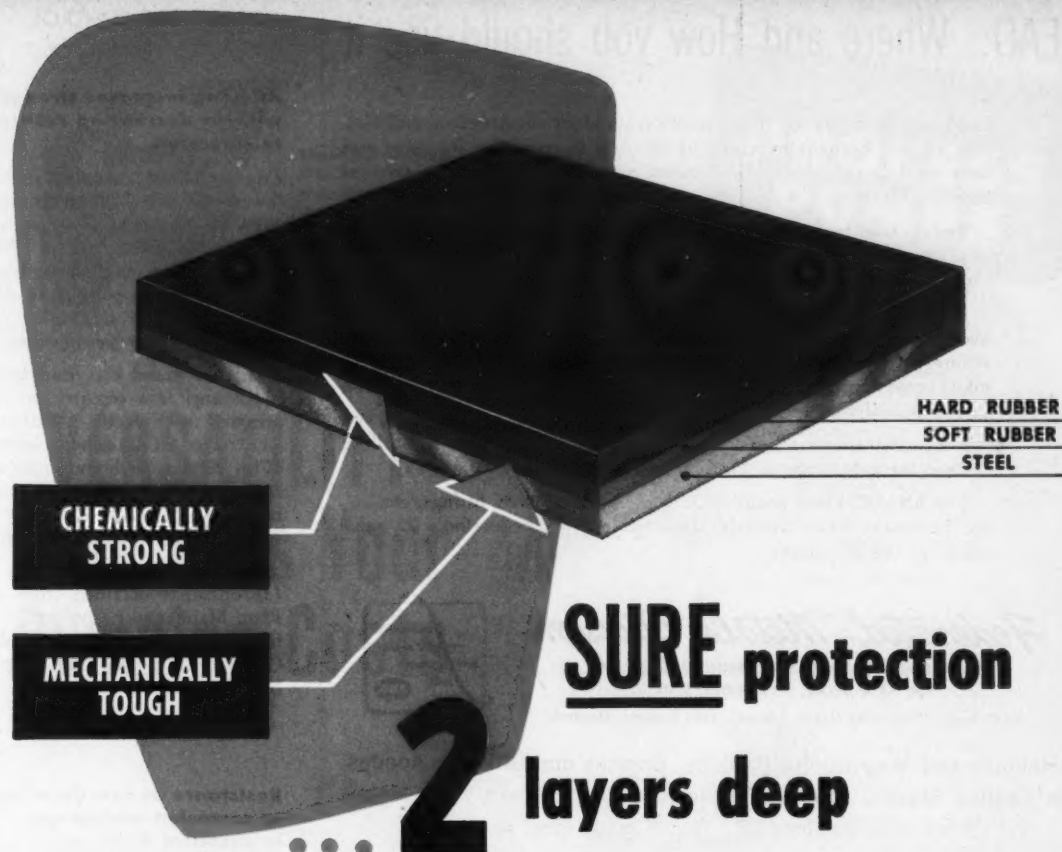
Protection against corrosion of new and old hot water generators and storage tanks can be obtained through application of a nonporous insoluble lining recently announced. The lining, applied by trowel to a thickness of $\frac{3}{4}$ " around internal surfaces, is said to greatly extend the life of equipment. Lining also furnishes extra insulation, reducing the heat loss. In addition, it eliminates the rusty water problem, according to manufacturer.



At left, hot water tank is shown being cleaned before application of lining. Completed lining on interior of tank appears at right

Application of the coating takes less than 24 hours. This work can be done by manufacturer's crews within a 250 mile radius of Philadelphia.

(Metalweld Plasticote lining is product of Metalweld, Inc., Dept. CP, Scotts Lane and Abbottsford Ave., Philadelphia 29, Pa. . . or for more information check CP 3587 on handy Reader Service slip between pages two and three.)



The only surface exposed to corrosives in an ACE hard rubber lined tank or pipe is the top layer of smooth, age-proof hard rubber — resistant to almost every acid, alkali, and corrosive salt. Underneath is a layer of shock-resistant soft rubber that firmly bonds the hard rubber to the steel — a bond so strong the rubber can't be peeled off, and won't loosen or blister. There's extra protection at the seams, and in the well-rounded fillets and corners. Flanges, too, are rubber faced. It's details like these that make one tank last longer than another — that make ACE rubber-protected equipment the finest you can buy.

**ACE
PLASTICS**

In addition to hard rubber and rubber-lined tanks, valves, pipe, molded parts, etc., we also offer corrosion-resistant equipment of many plastics such as Saran and Parian. We'll be glad to recommend the one best material for your job.

WRITE FOR BULLETINS



ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

When inquiring check CP 3588 on handy form, pgs. 2-3

LEAD...Where and How you should use it

Lead was probably the first corrosion-resistant construction material. The ancient Romans were among the first to recognize its value and they used it in the extensive water systems which were a part of their civilization.

Today, lead is widely used in acid manufacture and in the production of other chemicals; in pickling, plating and anodizing; and in the control of air pollution and in waste recovery.

In the chemical, textile, petroleum and metallurgical industries lead can be used safely in many instances where reliable control of strongly corrosive materials is imperative. It is dependable under many pressures, concentrations and temperatures... ideal for handling sulphuric, sulphurous and chromic acids.

For further information on the use of lead in your corrosive-handling system, write to Federated's Corrosion Advisory Service.

For ASARCO lead products... pipe, sheet, valves, fittings, etc. ... see Federated first. Available through any of Federated's 22 sales offices across the country.

Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY
120 BROADWAY, NEW YORK 5, N. Y.

In Canada: Federated Metals Canada, Ltd., Toronto, Montreal



Aluminum and Magnesium, Babbitts, Brasses and Bronzes, Anodes, Die Casting Metals, Lead and Lead Products, Solders, Type Metals

When inquiring check CP 3589 on handy form, pgs. 2-3



PHENOLINE 300

**Protects New Concrete, Resurfaces,
Repairs Old Corroded Concrete**

Phenoline 300 adheres to any neutral or alkaline surface.—concrete, transit, stone—without a primer. Mixed with silica-filler, it trowels in any thickness to a non-slip surface. Applied by brush or spray, it finishes to a smooth, easy-to-clean surface. Powerful bond is unaffected by light traffic, time or temperature.

Highly Resistant to Acids, Solvents, Salts and Caustics at Normal and Elevated Temperatures

Does Not Crack or Spall

Extremely Hard and Wear Resistant

Does Not Soften or Crack Under Heat

Makes Non-Skid Floors

Bulletin A-50 gives you the details on how you can corrosion-proof your concrete. Write for it today.

P1



When inquiring check CP 3590 on handy form, pgs. 2-3

CORROSION CONTROL

Alloying increases strength of lead without decreasing resistance to corrosion

Counter to the claims of some that alloying of lead lowers the corrosion resistance, General Aniline & Film has found such not to be the case, having obtained good service life on tellurium lead coils. The increased mechanical strength obtained from addition of .05% tellurium or 6 to 8% antimony has been found to correct sagging of coils and to be advantageous in other applications.

Plant has found that lead lines supported on angle or channel iron require less maintenance than lines armored with steel. Within the past year, coils constructed of leadlined copper have been installed. With respect to homogeneously lead lined agitator shafts, tendency toward cracking has been found to be more pronounced in the upper sections, where stresses are greatest and which are normally exposed to oxygen.

(Information obtained from address given at 1953 Plant Maintenance Conference by R. C. Thiede, chief field engineer, General Aniline Works, Div. of General Aniline & Film Corp., Dept. CP, Grasselli, New Jersey.)

Resistance of beryllium copper to corrosion widens use in chemical field...

one example is growing utilization of alloy for scraper blades

Corrosion resistance of beryllium copper to a variety of materials is extending its use in chemical processing operations. Although oxidizing acids, as well as those containing certain metallic salts, may prove extremely corrosive, it has excellent resistance to a number of other groups of chemicals. In addition, it has other outstanding advantages, such as hardness and non-sparking features.

Of recent significance is the growing use of beryllium copper scraper blades in chemical processing tanks and drums. The alloy is employed since it offers good resistance to wear and, at the same time, is not hard enough to wear the more-difficult-to-replace steel tank or roll. The most familiar application of beryllium copper in the chemical industry is for safety tools to prevent sparks.

Another common use for the alloy is for spring material. These applications include springs, bellows, contacts, and diaphragms. Typical examples range from miniature snap-action springs which are used in electrical switches to heavy duty shaker springs used in paper mills.

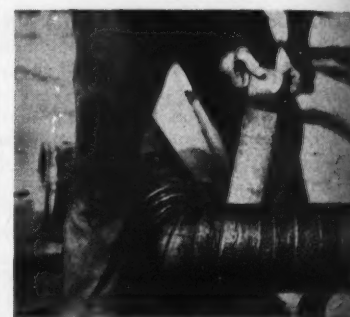
Beryllium copper is currently being employed for impellers and other pump and motor parts. It is also used as a current-carrying material in electrochemical and electroplating work.

Beryllium copper offers good resistance to sea water, being somewhat better than copper in this respect. Although not satisfactory for oxidizing acids, the alloy is not rapidly corroded by dilute sulfuric, cold concentrated sulfuric, or cold dilute hydrochloric.

TO COMBAT CORROSION

Specify **TAPECOAT**

...the Original Coal Tar Tape Protection for Pipe, Pipe Joints, Couplings and Tanks



TAPECOAT is a coal tar coating with a tar-saturated, close-woven fabric as a carrier for easy application, providing a *natural* protection against corrosion.

TAPECOAT serves as both bond and protection...requires no foreign adhesive.

TAPECOAT resists moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash, salt water, salt-laden air, barnacles and other severe corrosive and abrasive conditions.

TAPECOAT is clean to handle and easy to apply by spiral or "cigarette" wrapping with the use of a torch to bleed the coating for a bond to the surface. It cuts maintenance and replacement costs.

SIZED TO THE JOB

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths to meet varying requirements.

TAPECOAT has proved its dependability for gas and oil companies, railroads, telephone companies, air lines, ship builders and operators, water and sewage works, chemical and industrial plants, engineers and contractors... in combating corrosion both underground and above ground.

PROVED IN SERVICE SINCE 1941

Write for descriptive brochure and prices

The TAPECOAT Company

Originators of Coal Tar Tape Protection

1545 Lyons Street, Evanston, Illinois

When inquiring check CP 3591 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Beryllium copper offers sufficient resistance to acetic acid to make it practical for many applications.

Good results have been obtained with beryllium copper in many cold concentrated and hot or cold dilute alkalis. Sodium and potassium hydroxide solutions can be handled at room temperatures, but ammonium hydroxide rapidly attacks beryllium copper. Excellent resistance is offered to such organic chemicals as hydrocarbons, alcohols, ketones, aldehydes, and esters.

Beryllium copper is not corroded by fluorine, chlorine, bromine, or iodine when perfectly dry at room temperatures, but traces of moisture increase the corrosiveness of these gases. Good results have been observed for feather valves made of the alloy in handling moist carbon dioxide.

Beryllium copper has good resistance to chemically contaminated atmospheres although it is discolored in many cases. The scale that forms on the alloy under oxidizing conditions may be either an asset or a disadvantage according to the application. Beryllium copper provides excellent resistance to corrosion-fatigue and to stress corrosion cracking.

(Technical paper, "The Corrosion Resistance of Beryllium Copper Surveyed," was presented at the National Association of Corrosion Engineers Conference held in Chicago in March, 1953. The paper was written by John T. Richards, of The Beryllium Corp., Dept. CP, Reading, Pa. . . . check CP 3592 on handy form, pages 2 and 3.)

Tantalum strip available to close tolerances and thin gage

Tantalum strip, precision-rolled to close tolerances and to thin gage and foil, is now readily available. This non-magnetic and corrosion resistant metal, with tensile properties comparable to cold-rolled steel, is rolled in strip up to 6" wide and as thin as .0005", to tolerances as close as $\pm .0001$ ". It is available in any quantity from one pound up to thousands of pounds. Tantalum is used in the chemical and food processing industries for such applications as electronic controls, amplifiers, condensers, oscillators, timing devices, and signal or alarm systems.

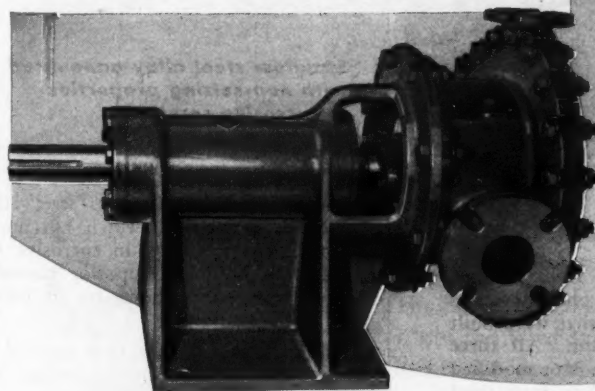
(Product of Industrial Div., American Silver Co., Inc., Dept. CP, 36-07 Prince St., Flushing 54, N. Y. . . . or for more information check CP 3593 on handy form, pages 2 and 3.)

No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with Putnam Publishing Co. many years ago . . . to help busy men like you!

THE EDITORS

VERSATILITY that Cuts Your Pumping Costs



YOU CAN HANDLE A WIDE RANGE of products with one type of pump when it is an Allis-Chalmers Type P Process Pump. Each of the three sealing methods shown here is interchangeable on any Type P pump with a minimum of alteration to the pump itself. No new major parts or permanent alterations are required to use any of these sealing methods.

CHOICE OF MATERIALS

The Allis-Chalmers Process Pump is available in a wide choice of materials to handle many combinations of abrasiveness and corrosiveness in the liquid

to be pumped. Usual materials include aluminum bronze, Ni-Resist, 316 stainless steel, and 18% chrome steel, plus almost any special material which may be required, including non-machinable alloys. Parts subject to varying rates of wear are separated for easy replacement.

GET DETAILS

For complete details on the Allis-Chalmers Process Pump plus competent engineering assistance, call your nearby Allis-Chalmers District Office. Or write Allis-Chalmers, Milwaukee 1, Wisconsin for Bulletin 52B6615.

A-3902

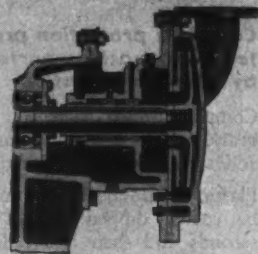
Equiseal is an Allis-Chalmers trademark.

ALLIS-CHALMERS

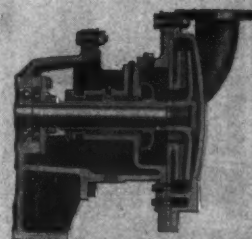


When inquiring check CP 3594 on handy form, pgs. 2-3

PROCESS PUMPS

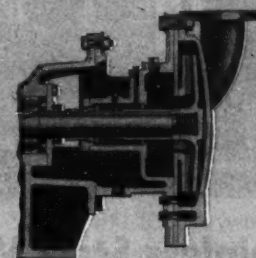


Standard Stuffing Box — for suction lift. Stuffing box on the suction side limits pressure on packing to suction pressure. Under suction lift conditions, the liquid being pumped does not enter the stuffing box.

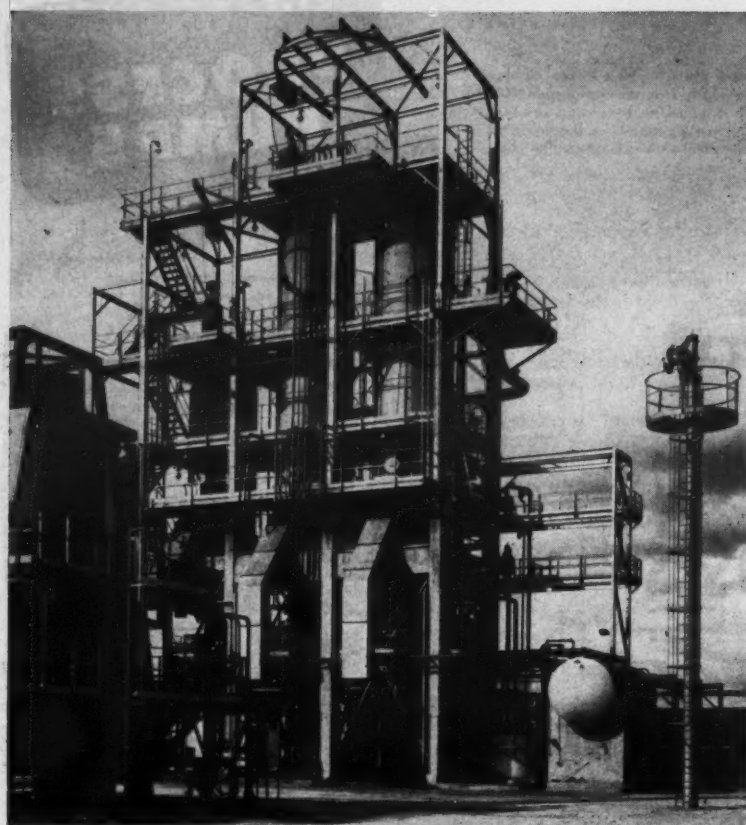


Equiseal Stuffing Box — for suction heads to 15 feet. The Equiseal stuffing box is equipped with an auxiliary impeller which produces a low pressure area in front of the packing. This low pressure area prevents the liquid being pumped from entering the packing on suction heads up to 15 feet at 1750 rpm.

Mechanical Seal — for suction heads over 15 feet. The Allis-Chalmers Process Pump may be fitted with a variety of mechanical seals for conditions where the suction head exceeds 15 feet. Each application is individually engineered.



PHOSPHORIC ACID PLANT



uses Stainless Steel Vessels

The phosphoric acid plant at the Scottish Oils Ltd., Grange-mouth refinery has two 9-ft. 3-in. diam. by 38-ft. phosphoric reactors and an 8-ft. 6-in. diam. by 22-ft. catch pot that were built and shipped from our Birmingham, Alabama plant. All three vessels are made of ASTM-A-240, Grade M, Type 316, modified stainless steel. Several other types of steel and alloys were used for heads, fittings and piping connections and a number of internal grid plates are made of solid nickel.

The handling of such a variety of metals call for production experience, skilled personnel and complete shop facilities. Chicago Bridge & Iron Company is equipped to handle all types of corrosion-resistant metals, clad steels and alloys. We also have facilities for stress-relieving, x-raying and de-scaling fabricated steel plates by the Horton Pickling Process.

When planning welded steel plate structures of carbon steel, stainless steel or alloys, write our nearest office for estimates or quotations.

Let Chicago Bridge & Iron Company engineers help you select the structures best suited to your needs.

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3	2107 Henley Bldg.	Los Angeles 17	1536 General Petroleum Bldg.
Birmingham 1	1533 North Fifth St.	New York 6	3314—145 Broadway Bldg.
Boston 10	1007—201 Devonshire St.	Philadelphia 3	1650—1700 Walnut St., Bldg.
Chicago 4	2116 McCormick Bldg.	Pittsburgh 19	3208 Alcoa Bldg.
Cleveland 15	2212 Midland Bldg.	San Francisco 4	1545—200 Bush St.
Detroit 26	1535 Lafayette Bldg.	Seattle 1	1307 Henry Bldg.
Houston 2	2151 C & I Life Bldg.	Tulsa 3	1649 Hunt Bldg.

Plants in: BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

When inquiring check CP 3595 on handy form, pgs. 2-3

CORROSION CONTROL

Complete protection provided to stored machine parts by strippable plastic

Complete protection is said to be furnished to tools, gears, and machine parts during processing, shipping, and storage by hot dip strippable coating.

Plastic should be heated to 190°C and the item to be coated dipped into it for approximately five seconds and then removed. In the case of small pieces a waxed string can be attached to each to allow complete immersing. Larger pieces are usually immersed by dipping one end and then the other.

It is suggested that a sharp stick be used for removing the coating. A stick will cut the film but will not disturb the metal finish. Upon removal of the plastic, a residual thin film of oil will be deposited. This can serve as a lubricant if necessary or can be easily wiped off. Thickness of film deposited on the metal parts depends entirely on the heat conductivity of the part as well as the varying of time and temperature.

(No. 3601 Plastic Peel is manufactured by Adhesive Products Corp., Dept. CP, 1660 Boone Ave., New York 60, N. Y. . . or for more information check CP 3596 on handy form, pages 2 and 3.)

Stainless steel alloy announced with non-seizing properties in corrosive service . . .

has high hardness and resists temperatures up to 1400°F

Availability of a stainless-steel alloy, known as V2B, is announced, which has non-galling, non-seizing characteristics in corrosive service. Alloy has high hardness, superior corrosion resistance, and resists temperatures up to 1400°F, according to manufacturer.

Alloy is a hardenable 18-8 type of stainless steel, containing copper, molybdenum, silicon, and a very small amount of beryllium. It is readily machinable in the quench-annealed state and may be hardened by a low temperature heat treatment which produces no distortion and only a light heat tinting discoloration, which can be readily removed if necessary.

In the annealed condition, the material is easily welded, using special welding rods containing an excess of beryllium. Unlike other precipitation hardenable alloys, product does not over-age at elevated temperatures and may therefore be used safely in steam applications and up to the 1400°F.

V2B may be produced readily in both the cast and wrought form, with the following balanced composition range considered best for the majority of applications:

Carbon	0.07% max
Chromium	19.0 to 19.5%
Nickel	9.75 to 10.25%
Silicon	2.75 to 3.25%
Copper	2.00 to 2.25%
Molybdenum	3.00 to 3.50%
Manganese	0.50 to 0.75%
Beryllium	0.10 to 0.20%

**Saran
rubber
CAN'T
rust...
CAN'T
corrode**

that's why
leading engineers choose
**MPC SARAN RUBBER* LINED
STEEL PIPE**
wherever corrosion is a problem!



You can be sure you're getting the highest degree of resistance to corrosive chemicals, oils, acids and solvents when

MPC SARAN RUBBER-LINED STEEL PIPE is specified. Available in either fabricated light gauge steel or standard steel pipe in 10' and 20' standard lengths, ranging in size from 8" up . . . or fabricated to your exact requirements. Fittings in standard and special designs for all diameters.

For additional information write today to your nearest MPC representative or to our application engineering department.

You can lick corrosion. It's as easy as MPC!

* a development of
The Dow Chemical
Company



MICHIGAN PIPE COMPANY

Bay City • Michigan

Manufacturers of Wood-Lined Steel, Saran Rubber-Lined Steel, Stainless Steel and Monel Piping. Represented nationally by Saran Lined Pipe Co., Detroit, (Ferndale) Michigan.

When inquiring check CP 3597 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CORROSION CONTROL

Typical hardness and mechanical properties of the alloy produced by the foregoing composition are as follows:

Hardness: (Brinell)	
As cast	302
Quench annealed	269
Annealed and hardened	363
Tensile strength	151,000 psi
Yield strength	122,400 psi
Elongation	3%
Reduction of area	2%

Resistance of the material in the hardened condition to sulfuric, hydrochloric, and phosphoric acids and their salts is said to exceed that of all precipitation hardenable alloys, and even that of type 316, the molybdenum bearing stainless alloy. In nitric acid, it is also superior to the other hardenable grades, but not quite the equal of types 304 or 316 stainless.

Comparative corrosion resisting properties of V2B in relation to other alloys follow. All metals listed, with the exception of Type 316, were tested in the hardened condition. The 316 alloy was annealed. All test pieces were cast, with the exception of Stainless W, which was wrought.

Material	Inches Penetration per Month
50% H ₂ SO ₄ @ 80°F	
V2B	.00010
Type 316 — 18-8SMO	.11300
17-4PH	Dissolved
Stainless W	Dissolved
Type 410 — 12% chrome	Dissolved
5% HCl @ 80°F	
V2B	.00100
Type 316 — 18-8SMO	.04135
17-4PH	.06540
Stainless W	Dissolved
Type 410 — 12% chrome	Dissolved
65% HNO ₃ @ Boiling	
V2B	.01200
Type 316 — 18-8SMO	.00190
17-4PH	.05870
Stainless W	.0305+
Type 410 — 12% chrome	.04250

High hardness and strength of alloy, plus its erosion resisting and non-galling characteristics, suggest many applications such as: valve disks, plug cocks, shaft sleeves, impellers, pump casings, wearing rings, poppets, conveyor links, rollers, gear blanks, and other parts requiring both wear and corrosion resistance.

(V2B stainless alloy is product of The Cooper Alloy Foundry Co., Dept. CP, Hillside, N. J. . . . or for more information check CP 3598 on handy form, pages 2 and 3.)

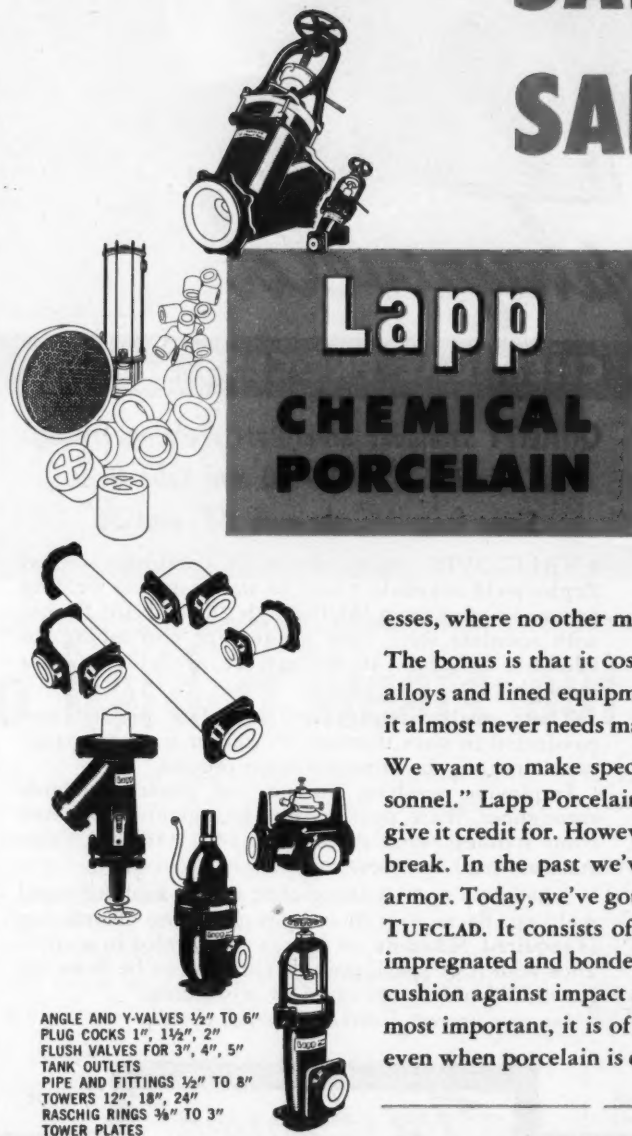
Batch Distillation Calculations? Nomograph on page 224 simplifies them.

SAFEST way to handle acid corrosion

SAFE from corrosion

SAFE from contamination

SAFE for plant and personnel



For problems involving severe corrosion, or elimination of contamination, best bet is a material chemically inert to product being handled—and it should be hard, smooth, strong, and non-porous.

That's a description of Lapp Chemical Porcelain—and a list of characteristics which have won it a permanent place in hundreds of plants, and hundreds of processes, where no other material ever gave as satisfactory service.

The bonus is that it costs a lot less initially than most corrosion-resistant alloys and lined equipment. And the economy is increased in the fact that it almost never needs maintenance or replacement.

We want to make special mention of the item "safe for plant and personnel." Lapp Porcelain is much tougher and stronger than most people give it credit for. However, under severe shock, physical or thermal, it will break. In the past we've supplied our equipment with several types of armor. Today, we've got the simplest, most economical, and best. We call it TUFCLAD. It consists of multiple layers of heavy fiberglass woven cloth, impregnated and bonded with an Epoxide resin. This armor shell acts as a cushion against impact damage, and insulator against thermal shock. But most important, it is of itself strong and tough—will hold line pressures even when porcelain is cracked or broken.

For your problem of corrosion or contamination, Lapp Chemical Porcelain may bring you a new standard of untroubled service, improved quality and lowered cost. Write for description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 163 Wendell St., Le Roy, N. Y.

When inquiring check CP 3599 on handy form, pgs. 2-3



WELDING FITTINGS for CHEMICAL PROCESS Service



TEES

LATERALS



CROSSES

RETURN
BENDS



... Included in the Zephyrweld fittings line are reducers and adapters to permit their use with practically every other known type of fitting.

WRITE FOR CATALOGS

Send for CATALOG 748, covering welding fittings for O.D. tubing—or for CATALOG 1051, covering Schedule 5-S and 10-S fittings for light gauge pipe.

QUALITY Stainless Steel Butt Welding Fittings in Schedule 5 — 10 — 40 and tube O. D. Sizes from ½" through 24" and 36"

• TRI-CLOVER offers the most complete line of Zephyrweld Schedule 5 and 10 stainless steel welding fittings in sizes from ½" through 24" and 36" for use with stainless steel light gauge pipe and tubing. In addition, Schedule 40 fittings are available in sizes through 24".

These quality fittings are annealed, pickled and passivated in sizes through 4". Larger sizes are passivated and may be annealed upon request.

Employing modern, unique and proved methods throughout, these porosity-free fittings are fabricated from stainless steel types 304, 347, 316 and other stainless steel analyses.

Schedule 5 and 10 fitting ends are cut flush for rapid welding. Because of their light gauge, no chamfering is required. Schedule 40 fittings are beveled in accordance with ASA specifications. Fittings can be flame cut for disassembly, used again by re-welding.

See your nearest distributor for full details.

Tri-Clover
MACHINE CO.
Kenosha, Wisconsin

TRI-ALLOY AND STAINLESS STEEL
SANITARY FITTINGS, VALVES,
PUMPS, TUBING, SPECIALTIES

THE COMPLETE LINE

FABRICATED STAINLESS STEEL
INDUSTRIAL FITTINGS AND
INDUSTRIAL PUMPS

PH-152R

CORROSION CONTROL

Corrosion, scale, slime, algae controlled by three water conditioning products

Three water conditioning products are reported to control corrosion, scale, slime, and algae in evaporative condensers, evaporative coolers, cooling towers, air washers, and water recirculating equipment. Materials are designed primarily to help maintain the efficiency of water cooling equipment. They are said to embody a recently developed principle of operation.

The first product, known as Vapco Preventive, is for use in new water cooling equipment, or in old equipment which has been conditioned by the other two. It is designed to keep condensers clean. This material "complexes" (inactivates) the solids usually found in water and holds them in solution to be drained off once a month. It also contains chemicals to inhibit slime and algae growth and to prevent corrosion. Product is neither acid nor alkaline and will not harm wood or metals or discolor water.

Vapco Slime-X, the second product, is for use as a "shock" treatment to effectively kill slime bacteria and algae growth. It is an organic chlorinated phenol which has been activated by incorporating a penetrant and an interface contacting agent. Material is said to rapidly penetrate gelatinous matrix and perform rapid kill and removal of contaminating organisms. It is not corrosive to metal and non-injurious to wood. Both of these first two products contain an effective foam control agent.

The third product, Vapco Cleaner, is an acid type salt designed to remove scale which may have accumulated on equipment through lack of proper water treatment. Cleaning process usually requires six to ten hours. No shutdowns are necessary for use of any of the three materials.

(Development of Garman Co., Inc., Dept. CP, 9555 Breuer St., St. Louis 23, Mo. . . or for more information check CP 3601 on handy form, pages 2 and 3.)

Chart shows corrosion resistance of cements to 297 chemicals

Information on what corrosion-resistant cement should be used to handle particular chemicals used in a process is presented in four-page chart. The resistance or seven classes of corrosion-resistant cements to 297 of the most generally used chemicals is shown.

Chart indicates that a cement mortar is available which will withstand every one of these chemicals except sodium hypochlorite. Chart is intended as a ready guide in selecting cements to meet particular problems. Final selection should be based on a thorough analysis of problem by corrosion engineers of the cement manufacturer.

Chart CP-586 is issued by Corrosion Engineering Dept., Pennsalt Chemicals, Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. When inquiring specify CP 3602 on handy form, pages 2 and 3.

When inquiring check CP 3600 on handy form, pgs. 2-3

CORROSION

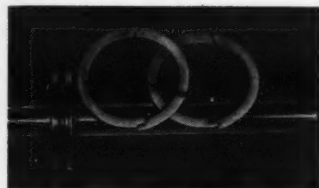
Piston ring seal has no corrosive action, is tough, inert

Uses: Suitable for piston applications where very small amounts of leakage are allowable.

Features: Seal, made of Kelon-T (Teflon), is tough, inert, and has no corrosive action. Operating range is from -100°F to $+300^{\circ}\text{F}$, at pressures up to 5000 psi.

Description: BW Series S-11022 Dual Kelon-T piston ring seal is an improved-type pressure responsive hydraulic piston seal for aircraft and industrial use. Seal is compact, responsive to bore irregularities, and has very little shift during pressure reversal. Friction at all pressures is very low.

BW Seal combines two identical Kelon piston rings with stepped, sliding joints staggered to form a continuous seal, and a metallic expander ring. Joint arrangement provides accommodation for dimensional changes due to heat and pressure. Installed in piston groove,

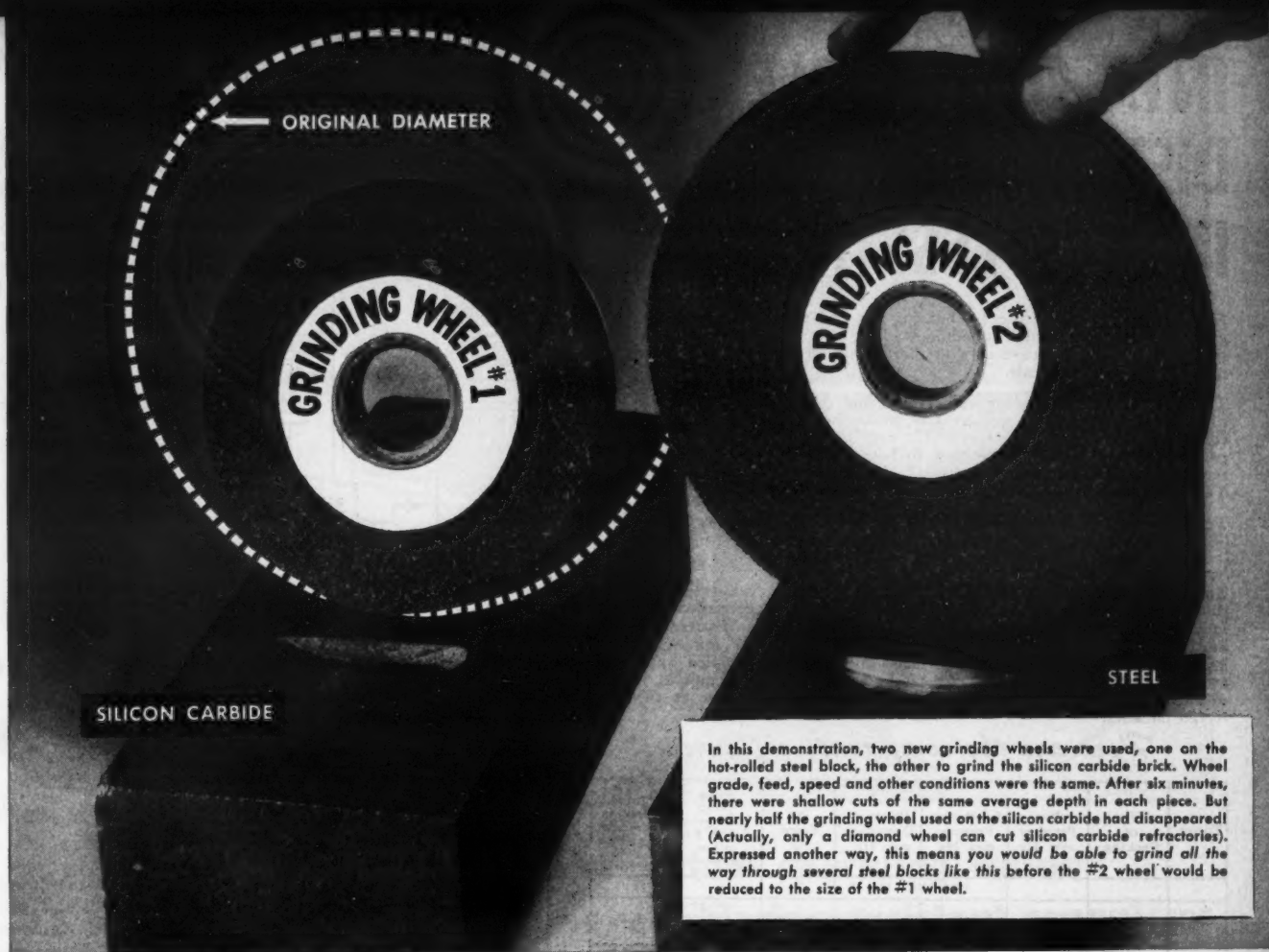


Seal's operating range is from -100°F to $+300^{\circ}\text{F}$, at pressures to 5000 psi

expander ring engages notches on inside diameter of seals and prevents relative rotation of seals and the consequent leakage where joints coincide. Radial force provided by expander ring enables BW seal to seal effectively at low pressure. Groove fabrication and seal installation and removal are said to be accomplished with ease. Seals are available in standard sizes from 1" to 4" OD.

(Product of Dept. G, W. S. Shamban and Co., Dept. CP, 11617 W. Jefferson Blvd., Culver City, Calif. . . or for more information check CP 3603 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 3604 . . . see information request blank between pages 2 - 3.



In this demonstration, two new grinding wheels were used, one on the hot-rolled steel block, the other to grind the silicon carbide brick. Wheel grade, feed, speed and other conditions were the same. After six minutes, there were shallow cuts of the same average depth in each piece. But nearly half the grinding wheel used on the silicon carbide had disappeared! (Actually, only a diamond wheel can cut silicon carbide refractories). Expressed another way, this means you would be able to grind all the way through several steel blocks like this before the #2 wheel would be reduced to the size of the #1 wheel.

harder than steel, more abrasion-resistant than paving blocks—silicon carbide is...

so hard it wears out grinding wheels

As hard as steel is, it can't compare with our silicon carbide refractories (trademarked CARBOFRAX®). Used under the toughest abrasion conditions known, these refractories have repeatedly proved able to outwear other normally durable lining materials. *This applies to room-temperature applications as well as to others ranging up to 3000 F, or more.* It applies to abrasion caused by rubbing or sliding, and to abrasion caused by impingement of sharp particles traveling at high velocities.

For example: In cyclone dust collectors where there is a constant blast of highly abrasive particles . . . in coke chutes and hoppers that must withstand punishing cascades of sharp-edged coke . . . in hot blast mains where abrasive dust is entrained in high-velocity gases . . . in billet heating furnaces where metal slabs are dragged across the floor. In short, wherever other materials need replacement so often as to make their use uneconomical.

Have you any spots like these; areas highly vulnerable

to abrasion? Then check on these CARBOFRAX refractories. Available as tile, brick or special, close-tolerance shapes, these materials can give your equipment "armor-plate" protection. They are particularly valuable where heat or chemical action may be teamed with abrasion. Write for our booklet that describes all the interesting properties of this and other unique super refractories. No obligation, of course.

CARBORUNDUM

Registered Trade Mark

Dept. S-93, Refractories Division
The Carborundum Company, Perth Amboy, N. J.

Send complimentary copy of Super Refractories booklet to:

NAME _____
POSITION _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____



INTALOX SADDLE PACKING DISTILLS 10% MORE CHARGE IN 10% LESS TIME

Field experience is consistently bearing out earlier test data reflecting the greater efficiency of Intalox Saddle Packing. But it is infrequent to have such excellent comparative data as that furnished us by a major manufacturer of organic chemicals.

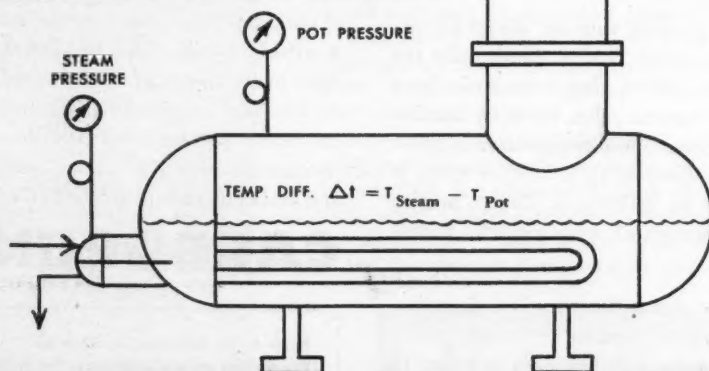
Two column stills with identical column and condenser characteristics distilled the same materials side by side, under carefully controlled duplicate conditions. The Towers were 19" ID with a packed height of 32'. Steam pressure in the coils was 100 psi-g in both cases. The only difference was that Tower "A" was packed with 1" chemical porcelain Intalox Saddles, Tower "B" with 1" chemical porcelain Berl Saddles.

Tower "A" handled a 10% greater charge in 10% less time than Tower "B" with product specification equal.

The substantially lower pressure drop through Intalox Saddles results from the unique, patented design, which provides a greater degree of randomness in packed beds. No two pieces can fit exactly into the other. Pattern packing, nesting, over-lapping and "blocked" areas are held to a minimum. The greater total surface area of Intalox Saddles is thus accompanied by greater available surface area to liquor and gas. Greater operating economies, higher product yields, and favorable HTU factors, establish Intalox as the preferred packing.

Here are the comparative figures

Tower	Type of Packing	Pot Pressure mm. Hg.	Condenser Pressure mm. Hg.	Pressure Drop Δp mm. Hg.	Pot Temp. °F	Steam Temp. (100 psi-g = 338°F) minus Pot Temp.	Relative Temp. Driving Force, as based on Berl Saddles
PRODUCT No. 1							
A	1" Intalox Saddles	22	4	18	234°F	$\frac{338^\circ - 234^\circ}{104^\circ}$	1.46
B	1" Berl Saddles	43	6	37	267°F	$\frac{338^\circ - 267^\circ}{71^\circ}$	1.00
PRODUCT No. 2							
A	1" Intalox Saddles	28	5	23	230°F	$\frac{338^\circ - 230^\circ}{108^\circ}$	1.46
B	1" Berl Saddles	42	6	36	264°F	$\frac{338^\circ - 264^\circ}{74^\circ}$	1.00



INTALOX OFFERS:
Lower Pressure Drop
Higher Flooding Limits
More Surface Area
Greater Free Space
More Area Accessibility

CORROSION CONTROL

Installation of stepdown laterals facilitated by plastic reducer tee

Recently available reducer tee for flexible plastic pipe makes installation of stepdown laterals more easy. Side outlet of the insert tee fitting is one standard pipe size smaller than the run. Molded from a single piece of thermoplastic material, the reducer resists rot, rust, and electrolytic corrosion. It is available in run sizes up to two inches.



Flexible plastic pipe can be connected within two minutes time with reducer tee

In joining pipe, sections are cut to desired length and fitting inserted. Stainless steel clamps are tightened over the pipe and fitting to draw the pipe down over the serrations of insert to assure positive leakproof joint. No special tools are required to complete connection within two minutes time.

(Announced by Carlon Products Corp., Dept. CP, 10225 Meech Ave., Cleveland 5, Ohio . . . or for more information check CP 3606 on handy form, pages 2 and 3.)

Corrosives, temperature, moisture have little effect on plastic pipe labels

An easily installed pipe identification system that requires no protective coating, cleaning or maintenance uses labels custom-made of Vinylite plastic rigid sheet. Corrosive conditions, temperature and humidity changes to which pipe labels are usually subjected are said to have little effect on plastic sheet, which resists moisture, oils, greases, acids, alkalis, and most other chemicals.

The rolled label is easily spread by hand and allowed to spring close around pipe. Colored and worded to fit exact requirements, label fits any size pipe up to 30" in diameter and is easy to read at a distance and from any angle.

Plastic also withstands rough handling, resists warping and aging, and does not support combustion. This durability gives labels long service life. Use

U. S. STONEWARE
AKRON 9, OHIO

When inquiring check CP 3605 on handy form, pgs. 2-3

CORROSION CONTROL



Labels are easily read and from any angle

of these pipe labels helps speed up repairs, promotes safety, aids in personnel training, and eliminates loss of time searching for specific pipes or valves. Labels are available in 6, 8, 10, and 12" lengths.

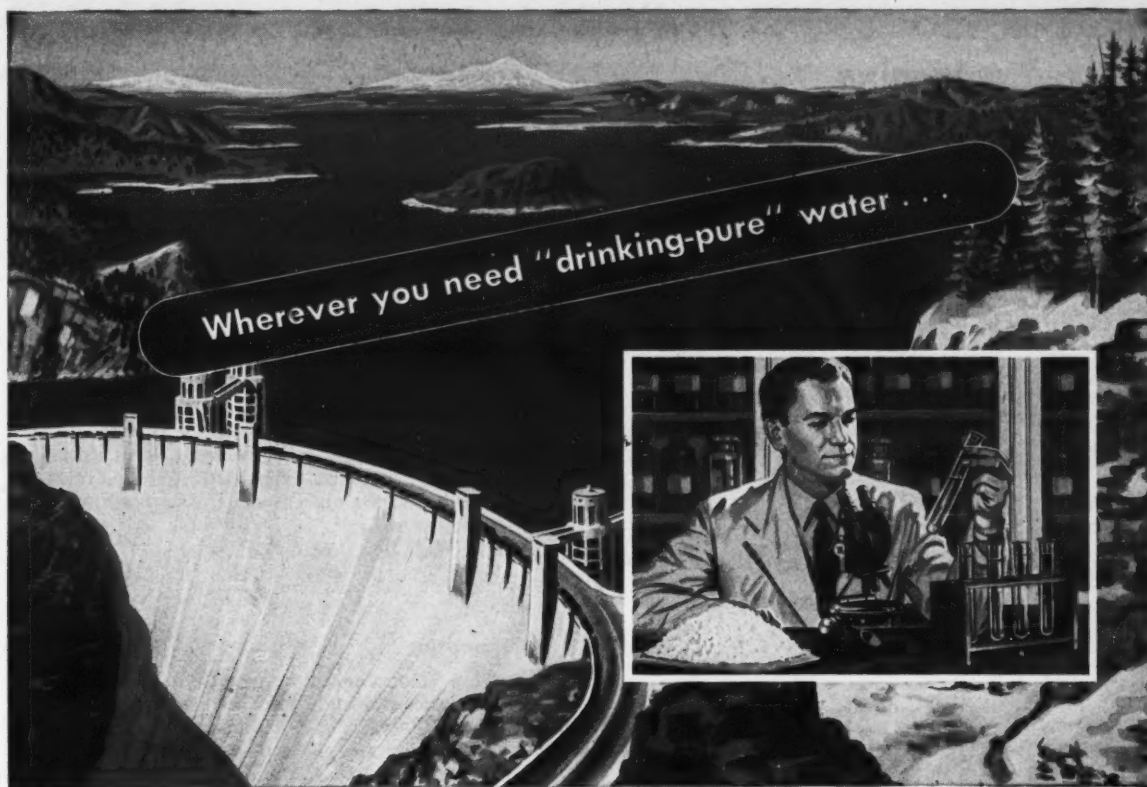
(Vinylite plastic rigid sheet is a product of Bakelite Co., a Div. of Union Carbide and Carbon Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y. Labels custom-made for pipe identification system are produced by Wilmington Plastics, Inc., Dept. CP, 810 S. Heald St., Wilmington, Del. . . . or for more information reader may simply check CP 3607 on handy Reader Service slip between pages two and three.)

Advantages of resin-base finishes shown in 16 case histories

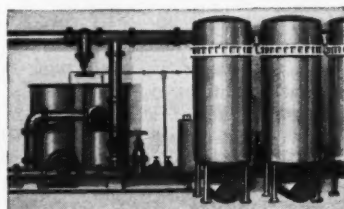
Advantages and uses of synthetic resin-base coatings in the chemical industry are described in eight-page illustrated folder. Brochure presents 16 case histories of actual industrial coating applications, which show the excellent resistance to acids, alkalis, and most chemicals of these particular finishes.

The coatings are inherently flexible and abrasion resistant. Even films as thin as .004" provide long lasting protection to equipment. Available in a variety of colors, the quick-drying coatings may be applied by spraying, dipping, roller-coating, or brushing. Specific applications include tank cars, oil pipe, acid tanks, sewage disposal plants, hopper cars, shipping containers, plating racks, and steel tubing. Pamphlet also contains a tabulation of the effects of various chemicals upon vinyl resin-base coatings.

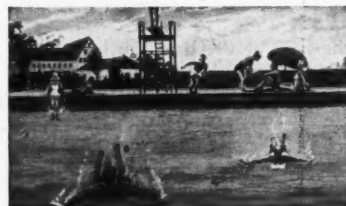
Folder J-743 is issued by Bakelite Co., Div. of Union Carbide & Carbon Corp., Dept. CP, 300 Madison Ave., New York 17, N. Y. When inquiring specify CP 3608 on handy form, pages 2 and 3.



CELITE FILTRATION produces clear sparkling water ... even removes chlorine-resistant organisms



In municipal water works—engineers find that a Celite Diatomite Filtration System permits lower capital investment plus high operating efficiency. Filtration is extremely thorough, the filter cake can withstand many times the pressure of an ordinary filter bed. No pH control is necessary with Celite.



In swimming pools—operators find that Celite Filtration not only safeguards the purity of pool water, but it provides sparkling clear, inviting water—an important asset in attracting customers. With Celite Filtration, there is a continuous recycling of water at fast flow rates, and the need for chemical treatment is reduced.

Celite* Filtration removes even the finest suspended solids such as amoebae and algae—many of which cannot be filtered by other means. All these impurities are entrapped by Celite's almost infinite network of tiny porous particles . . . thus reducing the need for chemical treatment. Celite offers many other advantages, too . . . it permits important space savings in the installation, high flow rates are maintained, and far less backwash water is required for cleaning the system.

Carefully processed from the purest deposits of diatomaceous earth, Celite is available in nine standard grades. Each is designed to filter out suspended impurities of specific size and type. Utmost uniformity of

product is maintained, so that whenever you reorder, you are assured of the same accurately graded powder.

Municipal waterworks engineers, food processors, beverage manufacturers, swimming pool operators . . . all who require "drinking-pure" water, can benefit from filtration with Celite Filter Aids. It will pay you to investigate the many advantages of Celite for your particular requirement! To have a Celite Filtration Engineer study your problem and offer recommendations, simply write Johns-Manville, Box 60, New York 16, New York. In Canada, 199 Bay Street, Toronto 1, Ontario. No obligation or cost.

*T.M. Reg. U. S. Pat. Off.



Johns-Manville CELITE FILTER AIDS

When inquiring check CP 3609 on handy form, pgs. 2-3

making
"cobra coils"
out
of
stainless
tubing?



Probably your fabricating problem is not so complex—but whatever it is—here's the "charm" to make it easy. It's the new Carpenter Bending and Coiling slide chart for Stainless Tubing and Pipe. Send for it today.

THE CARPENTER STEEL COMPANY
Alloy Tube Division, Union, N.J.

When inquiring check CP 3610 on handy form, pgs. 2-3

Briefs . . . from contemporary publications

Here's a quick look at interesting articles appearing in other publications,
... as selected by Editorial Staff of CHEMICAL PROCESSING

Simple test eases design of continuous-tunnel dryers

Paper presents a new method of designing continuous-tunnel dryers, based upon a simple experimental test in which stock is exposed to same sequence of drying conditions as would occur in proposed full-scale unit. Comparisons are made of drying rate curves plotted from tests and calculated by conventional methods. Six pages, three tables, seven figures. ("Chemical Engineering Progress," June 1953, page 319.)

Automation

"How automatic can we get?" is raised by mass spectrometer article. Pro's seem to outweigh the con's in seven typical applications considered. Descriptions are given of how automatic mass instrument is used and could be used. 7 figures, 2 tables, 4 pages. ("Petroleum Engineer," June 1953, page C-5.)

Pyrolysis products of polystyrene—new method discussed

Authors describe new technique for mass spectrometric study of pyrolysis products of polystyrene. Polystyrene was placed in small tube furnace and degradation products evaporated directly into ionization chamber of a mass spectrometer. At about 330°C a fairly complicated mass spectrum was observed, extending to about mass 520. 2 pages, 1 table. ("Journal of Research of the National Bureau of Standards," April '53, page 201.)

Rare earths and other developments in drier technology

Excursion into the field of the Rare Earth metals for paint driers is described in detail. Other types of driers that have been recently developed are also covered. 3 pages. ("Paint & Varnish Production," June 1953, pages 38, 39, & 76.)

Analyzing handling costs in processing

Value of analyzing materials handling costs between machines and departments is stressed in article. Author cites importance of supplying

materials handling engineer with adequate data and lists eleven "musts" as well as value of informative plot plan of plant showing departments and equipment used. ("Flow," May, 1953.)

Reducing engine deposits with lubricant additives

Authors use a bench-scale air evaporation test to demonstrate that oil antioxidants may be effective in minimizing residue formation at 625°F. Antioxidants were shown to decrease engine deposits and octane requirement increase in the absence of the fuel and lead factors. 8 pages, 10 tables, 6 figures. ("Industrial and Engineering Chemistry," July 1953, page 1501.)

Efficiency of pulsed extraction column

Performance of a continuous liquid-liquid extraction column operating with pulsating flow is analyzed. HTU and HETS are calculated for several experimental runs designed to show effect of 1) flow rates, 2) pulse amplitude and frequency, and 3) continuous phase. Eight pages, four tables, seven plots, three photos. ("Chemical Engineering Progress," June 1953, page 279.)

Liquid-liquid extraction in lab and pilot plant

Objective of investigation: to determine the feasibility of translating results secured in small, packed towers to similar towers of larger diameter. Operating conditions, equipment used and results attained are stated. 16 pages, 9 tables, 5 figures, 2 pages discussion. ("Transaction of the Institution of Chemical Engineers, London—Vol. 30," page 109)

Partial combustion as a process

Author discusses growing use of tonnage oxygen in petrochemical industry. Following a brief rundown of how several plants are using oxygen in partial combustion processes, he states principal advantages as 1) absence of nitrogen in product, 2) higher partial pressure (of oxygen & co-product) attainable in process, 3) high partial pressure of reaction product, and 4) use of high recycle ratios. Thermal advantages are also

stressed. Reaction thermodynamics for several systems are discussed in the article — a second part is to follow. Five pages. ("Petroleum Refiner" June 1953, page ninety.)

Punch card system moves materials

Use of punched cards for directing flow of materials along pre-determined conveyors is described. Article tells of setup used by English car manufacturer, but system might also be adapted to manufacture of smaller items. Delivery of right parts to right assembly area at the right time, even with desired deviations from normal, cited as one of principal advantages. 5 illustrations, 2 pages. ("Plant Engineering", May, 1953.)

Ion exchange may offer solution to disposal problems

Article discusses synthetic ion exchange materials for use in disposal of wastes. Most widely used application in chromate recovery from plating or anodizing applications is reviewed. Suggestions are made as to how ion exchange may effect striking economies in treatment of certain other wastes. 3 pages, 1 table, 3 figures. ("Water & Sewage Works," July 1953, pages 288 to 290.)

Use of automatic control in the paper industry

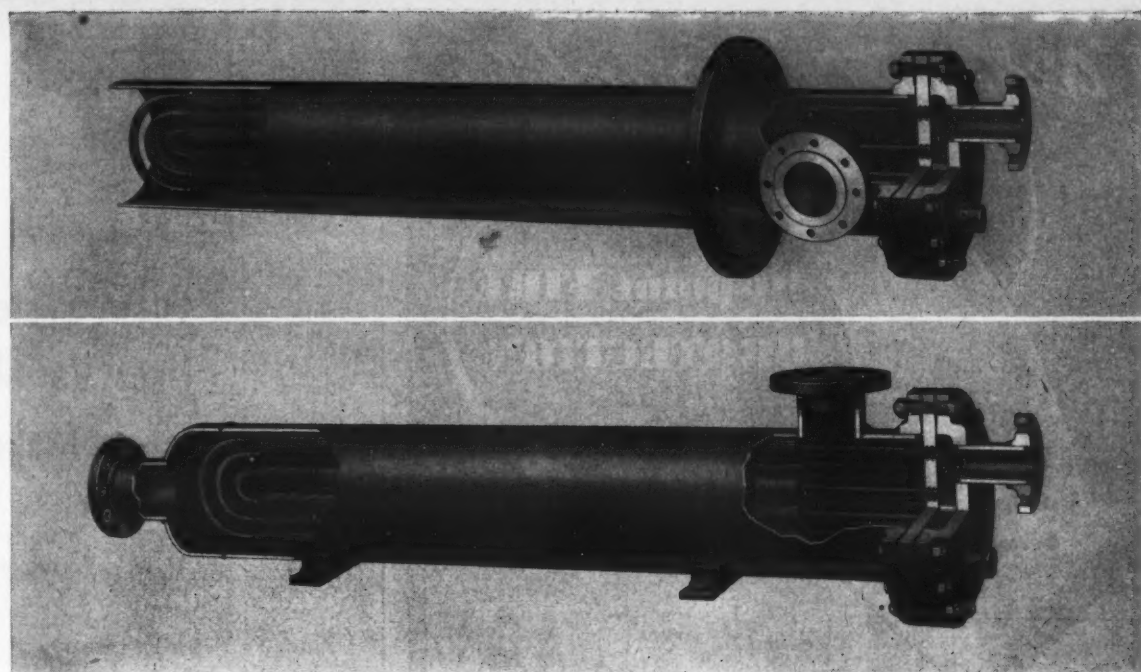
Article describes some automatic control methods being used in the pulp and paper industry of various countries. Several typical applications of modern control are discussed in the general categories of digester and evaporator control, stock flow metering and blending, and regulation of addition of sizing, color, alum, etc. Three pages, six figures. ("The Paper Industry," June 1953, page 343.)

Piping of liquid sodium

Plant set-up with which liquid sodium is being pumped through piping system at the Knolls Atomic Power Laboratory is described in article. Handling a hazardous chemical by this procedure is of interest for other possible applications. 2 pages, 6 figures. ("Heating, Piping, & Air Conditioning," July 1953, pages 112 & 113.)

Effect of moisture content on solvent extraction

Article summarizes results of study using dehulled cottonseed meats and soybeans in an extraction with trichloroethylene and a "hexane" fraction. ("Journal of the American Oil Chemists' Society," May, 1953, page 216.)



BROWN FINTUBE

Tank Suction Heaters and Line Heaters Offer Many Outstanding Advantages

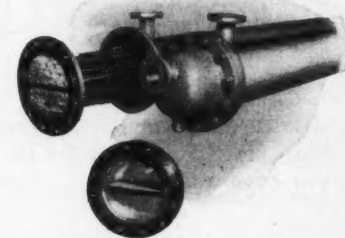
Brown welded fintubes provide much greater heating surface per foot of length than plain bare pipe or tubing. Consequently these heaters transfer more heat — at lower temperatures — assuring faster, more efficient heating without damaging the material or causing coking and build-up on the heating surface.

Metal bands placed around alternate fintubes in the bundle prevent the tubes from interlocking. This eliminates baffles and tube spacers that create back eddies and stagnant areas that encourage fouling;—and permits the fluid to travel through the longitudinal passages of the fintubes in close contact with the fins and center tubes — at low pressure drop.

Tank Suction Heaters that mount on a tank nozzle or the tank shell — also Line Heaters for pressure or suction service. Sizes 5" to 24" in diameter and 4' to 24' in length. Send for Bulletin No. 521. It gives full details.



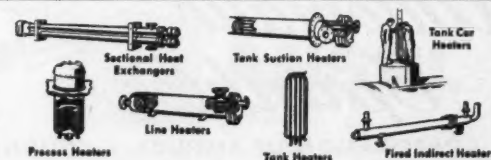
Brown Fintube Hairpin Bundles Showing the Banding of Alternate Tubes that Eliminates Baffles and Assures Unobstructed Flow.



Hairpin Bundle Assembled in Shell Showing Mounting of Tube Sheet Between the Shell and Head.



BROWN FINTUBE CO.
Elyria, Ohio



NEW YORK • BOSTON • PHILADELPHIA • PITTSBURGH • BUFFALO • CLEVELAND • CINCINNATI • DETROIT • CHICAGO • ST. PAUL • ST. LOUIS • KANSAS CITY
MEMPHIS • BIRMINGHAM • NEW ORLEANS • SHREVEPORT • TULSA • HOUSTON • DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • and ST. THOMAS, ONT.

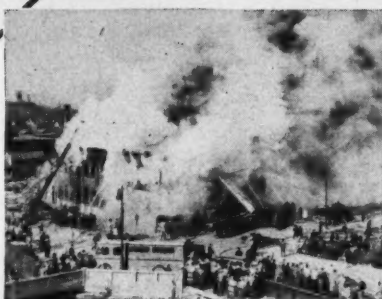
When inquiring check CP 3611 on handy form, pgs. 2-3

"Automatic" Sprinkler

10 point FIRE PROTECTION

spells
the
difference
between

PROFIT and LOSS!



This scene of a chemical plant going up in smoke and flames is repeated scores of times daily throughout the country. Newspapers referred to this one as a "half million dollar blaze." But, they were only talking about the building and its contents. They didn't refer to losses in terms of out-of-service time, lost customers, inflated costs of rebuilding, destroyed records, vanishing profits. No, those losses are intangible—yet, just as real, just as eminent as the physical cost of fire destruction.

"Automatic" Sprinkler 10 Point Fire Protection is an absolute safeguard against fire loss, tangible and intangible. It's a profit making service that saves you money whether you have a fire or not . . . saves your business if you do!

Get The Facts: Write for informative 36-page booklet, "The ABC of Fire Protection." It's free!

"Automatic" Sprinkler



CORPORATION OF AMERICA • YOUNGSTOWN, OHIO
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

When inquiring check CP 3612 on handy form, pgs. 2-3

safety

Foam System Protecting Tanks Uses Variable-Orifice Foam Maker

Units are engineered to utilize existing water pressures and piping

A Canadian chemical plant — Dow Chemical of Canada, Ltd. — has installed a mechanical foam system employing a selective-orifice type foam maker to guard its storage tank farm. Of the ten tanks in the group, three are 60 x 30', four are 30 x 24', and three are 20 x 20'. Benzol, ethyl benzene, and crude and finished styrene and toluene are the contents.

Advantage of the selective-orifice foam maker is that it can be engineered to fit existing field conditions and thus permit foam delivery at the exact rate necessary. Orifice plate in each foam maker is calculated so that it passes the volume of solution (foam liquid and water) required by the National Board of Fire Underwriters regulations for the area to be protected at existing water pressures. When several foam makers must be used, the orifice of each is designed so that together they will give the proper volume of solution. These features usually allow the use of smaller devices, piping and pumping equipment.

In this installation, foam system manufacturer's MCV-33 foam chambers were installed on the 60' diameter tanks and MCV-9 foam chambers on the 30' and 20' diameter tanks. Orifice size on the foam maker was selected so that water flow rate would be one gpm for each 10 square feet of largest individual area to be protected.

Underground piping for this system consists of two main headers — one 6" and the other 3". These headers run parallel to the tanks with separate lines extending from

the headers to the individual tanks. On each line there is a post-indicating valve which controls the flow to the tanks and on the main headers there are five foam hydrants at strategic points for general protection of the dike areas. The piping is all connected to one central foam house.

Dow constructed a special foam house containing a 1500 gallon foam storage tank, a foam liquid proportioning pump with a relief setting of 200 psi, a water booster pump which will increase the normal fire main pressure of 90 psi to 160 psi, and two flow-meters — one on the water line and the other on the liquid foam line.

With the construction of this system, two men are required to put it into operation — one man to control the valves, pumps, etc., in the foam house, and one man to open the correct post-indicating valve to the tank or fire.

A feature of the proportioning system is its simplicity of operation. To obtain the correct proportion, the operator merely turns the valve in the foam liquid line until the indicator of that flow-meter matches the indicator of the water flow-meter. The right amount of foam liquid will then be added regardless of the amount of water being used.

On the discharge line of the liquid proportioning pump there is a return line to the foam storage tank plus a control valve. By regulating the valve, surplus foam solution over and above the amount required is returned to the storage tank.

(Certain details of installation were supplied by P. D. Scott, Works Manager, Dow Chemical of Canada, Ltd., Sarnia, Ontario. Mechanical foam system is the Aer-O-Foam unit manufactured by National Foam System, Inc., Dept. CP, Union & Adams Sts., West Chester, Pa. . . . or for more information check CP 3613 on handy form, pages 2 and 3.)

Expenditures for safety pay dividends in the long run

**East St. Louis Works of Alcoa
shows 40% reduction in compensation costs in 15-year period**

THERE is an art and science to injecting money, time and intelligence into safety programs to produce fewer accidental injuries with resulting lower operating costs. Money alone will not do the whole job, and the expenditures of large amounts of it, especially in smaller companies, is not tantamount to an efficiently functioning safety program.

In the Aluminum Company of America a strong belief is held in the three E's of safety: Education, Engineering and Enforcement.

The East St. Louis Works of Alcoa set a new world's safety record in the ore preparation division of the non-ferrous metals industry. A record of 2,401,644 accident-free man-hours was established from April 13th to November 24, 1952.

The three E's each require the spending of some money, but the expenditures are actually good business and in the long run produce money by reducing or eliminating the costs of accidents. They produce something even more important from the humanitarian point of view, of course, when they reduce fatalities and permanent disabilities occurring from industrial accidents.

Based on the frequency and severity rates in 1928 before it started its intensified safety program and on present day rates, Alcoa engineers estimate that the company had reduced the direct and indirect costs of accidents by \$1,849,000 to 1951. In addition, in a study of the cost records over a 15-year period at the East St. Louis Works, it was found that the compensation cost rate per \$100 payroll has been reduced 40% in the latter half of this period as compared to the first half. From 1938 to 1945 compensation

(Continued on next page)

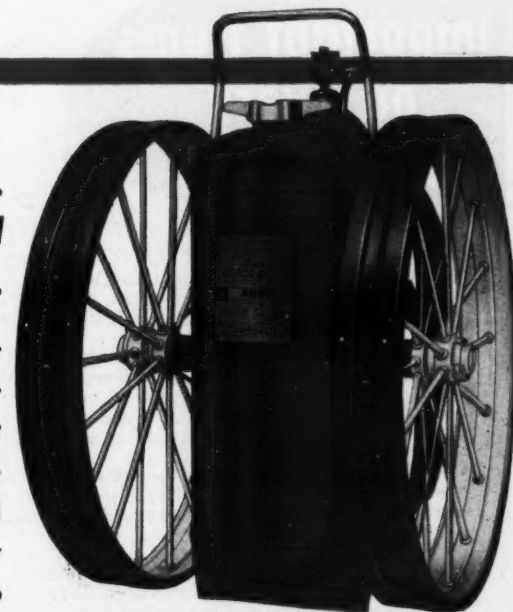
NEW ANSUL WHEELED FIRE EXTINGUISHERS *provide*



MODEL 150-B

... GREATER FIRE-KILLING CAPACITY ... HIGH-SPEED OPERATION and EASIER MANEUVERABILITY ...

Ansul "B" Model Wheeled Extinguishers are completely new. Dozens of design changes have improved their operating characteristics as well as their appearance. They provide faster, easier extinguishment of fires almost twice as large as those handled by our "A" model wheeled extinguishers. New Ansul Wheeled Extinguishers are easier to move to the fire. They can be actuated faster. They'll put out more fire faster. They're easier to recharge and maintain. And they will give even more years of trouble-free service.



MODEL 350-B



For a demonstration call your Ansul representative today. Or for additional information send for file number W-20.

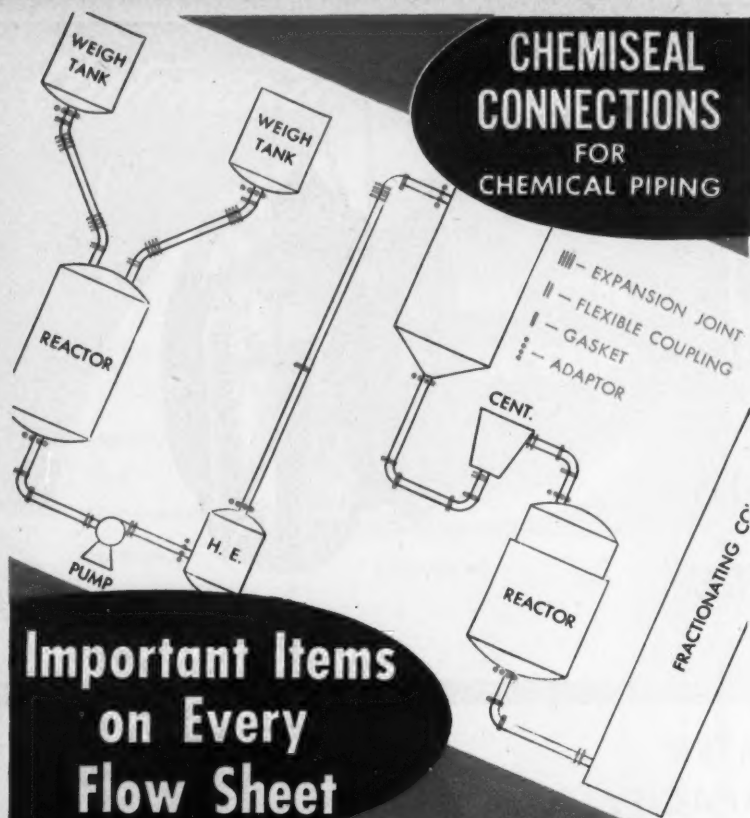


ANSUL
Chemical Company

FIRE EQUIPMENT DIVISION • MARINETTE, WISCONSIN

MANUFACTURERS OF DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT, REFRIGERATION PRODUCTS, INDUSTRIAL AND FINE CHEMICALS AND LIQUEFIED GASES

When inquiring check CP 3614 on handy form, pgs. 2-3



Important Items on Every Flow Sheet

Whatever the pipe-to-pipe or pipe-to-equipment sealing problem—whatever the materials of construction or flange specifications—whatever the mechanical or thermal shock or movement involved—there are engineered Chemiseal Connections to fill the bill.

CHEMISEAL GASKETS include Teflon®-Jacketed, soft filler types for Corning-conical flanges and glass lined steel connections; Snap-on type gaskets molded from Teflon to match contour of conical and glass pipe; Teflon cut gaskets, available either as ring or full face gaskets for all standard pipe flanges or for irregular shaped openings.

CHEMISEAL EXPANSION JOINTS—utilizing a Teflon Bellows of several convolutions, and permitting maximum axial expansion and contraction of piping. Connect unlike piping ends and nozzles without gaskets or adaptors.

CHEMISEAL FLEXIBLE COUPLINGS—close-coupled expansion joints with only two bellows convolutions. Particularly suited for absorption of vibration and correcting slight misalignments of piping.

CHEMISEAL ADAPTORS—connect unlike piping ends and nozzles. A cushioned, rigid steel core is contained in a Teflon Jacket, providing easy-to-handle single units.

Write for further information.

**UNITED
STATES
GASKET
COMPANY**

FLUOROCARBON
PRODUCTS DIVISION
CAMDEN 1, NEW JERSEY

Representatives in Principal
Cities Throughout the World

CHEMISEAL CONNECTIONS FOR CHEMICAL PIPING

SAFETY

(Continued from preceding page)

costs averaged 37c per \$100 payroll, and from 1945 to the present costs were 22c per \$100 payroll. The costs include compensation paid to injured employees plus legal fees or other related charges. From these figures it is obvious that safety programs can and should be looked upon as loss prevention measures rather than as burdens of cost.

There are some additional benefits also — the hidden costs of accidents are estimated as being four times as great as the total cost of compensation paid plus medical expenses. Therefore, even though a company is insured at a flat premium rate against accidents, it is not insured against the hidden costs. Thus, as the safety record improves, even further economic dividends will accrue because, of course, insurance premiums will cost less and there will be fewer hidden costs to pay.

(From an address made at the Arkansas Safety Conference, Little Rock, Ark., Nov. 19, 1952 by D. H. Tilson, Works Manager, Aluminum Ore Co., East St. Louis, Illinois.)

Gloves resist temps ranging up to 800°F . . .

made of bright red cloth for easy identification

Uses: For handling hot materials and tools. Gloves are available, either lined or unlined, for temperatures ranging 800°F.

Features: Manufactured from a heavy bright red cloth which permits positive identification of the gloves. This enables supervisory personnel to see whether or not proper glove is being used.

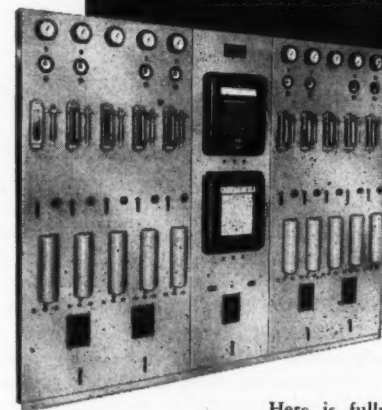
Description: Flame-Proofed gloves are made of manufacturer's Jomac Cloth which is twisted loop pile fabric. Tiny air cells locked in the fabric insulate against heat and cold. Gloves are reversible and fit either hand. Any two gloves will make a pair (four wearing surfaces).

(Manufactured by C. Walker Jones Co., Dept. CP, 6135 N. Lambert St., Philadelphia 38, Pa. . . or for more information check CP 3616 on handy Reader Service slip, pages 2 and 3.)

a few
cents a day*
keeps a
killer away!

with

TALLER & COOPER'S ADVANCED CARBON MONOXIDE DETECTOR



*
LIFE IS CHEAPER
THAN YOU THINK
... It costs only
a few cents a day
to operate Taller
& Cooper's CO
Detector, for complete
protection
against deadly
carbon monoxide.

Here is fully automatic protection against CO . . . the killer you can't see, taste or smell . . . the poison so insidious it produces chronic physiological disorders even with the smallest concentrations.

The Taller & Cooper Detector measures from 0 to 5 parts per 10,000 of CO in the air and indicates when and where blowers must be turned on. It can also automatically control blowers and requires no special skill for successful operation. Simply and economically, this CO Detector is serving in power, industrial and processing plants, foundries and major facilities with a minimum of maintenance.

May be adapted for detection of other combustible and toxic gases.

Write for Bulletin 201 and full details

TALLER & COOPER, INC.

ENGINEERS • MANUFACTURERS

81 Front Street • Brooklyn 1, N. Y.

Special Purpose Instrumentation.

When inquiring check CP 3615 on handy form, pgs. 2-3

When inquiring check CP 3617 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Rubber fire burning 2 days knocked out in 2 1/2 hr by surfactant . . .

material effective against deep-seated fires where necessary to penetrate surface

A seven-alarm crude rubber fire that occurred in Philadelphia and burned for two days was extinguished in two and one-half hours by a chemical compound, Rockwood Wet. The blaze started after the collapse of a five-story warehouse holding vital government stockpiles — 4000 tons of crude rubber and 2000 tons of tannin extract. When all other methods had failed to extinguish the blaze, the fire chief in charge tried the "wet water."

Approximately 2500 gallons of the material were rushed to the fire and mixed in a special wagon at the rate of one gallon per 100 gallons of water. It was then applied as a spray over the blaze. Firemen sprayed 70,000 gallons of the mixed liquid on the blaze for two and one-half hours when it was declared extinguished.

The surfactant, Rockwood Wet, is a heat stable, wetting and penetrating agent with the viscosity of glycerine. It is especially effective against deep-seated fires where it is necessary to penetrate a packed combustible material.

(Rockwood Wet is available from Rockwood Sprinkler Co., Dept. CP, 38 Harlow St., Worcester 5, Mass. . . . or for more information check CP 3618 on handy form, pages 2 and 3.)

Simplified, faster-acting valve now on line of portable CO₂ extinguishers . . .

valve disassembly easy on design offered in 2 1/2, 5, 10, 15 and 20 pound models

Uses: In combatting flammable liquid (Class C) and electrical equipment (Class B) fires.

Features: Simplified, faster-acting valve which has a number of advantages over the valve it replaces: disassembles for servicing without special tools, squeeze lever directly over valve gives quicker discharge, removable siphon tube, and safety disc is side-mounted instead of on top for added protection against damage.

Description: Portable carbon dioxide fire extinguisher incorporating the newly designed valve is available in five models: Alfco 2 1/2, 5, 10, 15 and 20. The model numbers denote the weight capacity of the respective units. Units are equipped with Alfco Anti-Statik Discharge Device which prevents build up of static electricity.

To prevent accidental discharge of unit, a double prong locking pin is used with one prong slightly sprung. This arrangement prevents locking pin from falling out while extinguisher is being moved or transported.

(Introduced by American-LaFrance-Foamite Corp., Dept. CP, 903 Erie St., Elmira, N.Y. . . . or for more information check CP 3619 on handy form, pages 2 and 3.)



More electric power for the biggest state ...with the Help of the Biggest "S" Monel Impeller Inco Ever Cast

Everything's big in Texas.

But a Texas chemical company found that electric power output wasn't big enough to meet requirements for increased production.

The only solution was to build another generating plant.

For cooling, the plant could use brackish sea water with a mean temperature of 85° F. In short order such water could damage the emergency pump used to maintain proper circulation of the condenser discharge water from the turbine generators. Costly shut downs were sure to result unless the pump impeller was made of a hard and corrosion resisting material.

So when the chemical company ordered an 84-inch custom-built Morris Vertical Axial Flo Pump, it specified "S"® Monel for the impeller. And for additional pump protection it specified centrifugally cast Monel® pump sleeves.

They called on Inco to cast the "S" Monel pump impeller. When finished, it weighed 3023 pounds — the largest "S" Monel impeller they had ever cast!

Inco-Cast sand or centrifugal castings may be a practical solution to some problem in your plant. Take a look at what you get with Inco castings.

This 3023-pound "S" Monel pump impeller was installed in an 84-inch Morris Vertical Axial Flo Pump at the MORRIS MACHINE WORKS, Baldwinsville, N. Y. The largest "S" Monel impeller ever cast, its size is a sharp contrast to the impeller in the man's hand—one of the stock models produced by the hundreds in Inco's foundry. The pump is capable of handling 120,000 gallons per minute at a total Discharge Head of 10.5 feet, designed to operate if normal water flow is interrupted for any reason.

1. Castings that frequently outlast other materials under destructive service conditions. That's because they are made of Inco Nickel Alloys, which have been especially developed to withstand corrosion, abrasion, erosion and galling.
2. Castings in any practical shape or size you need. Inco has specialized in castings for over 47 years and is equipped to make your castings whether they weigh a few ounces or tons.
3. High quality castings because they are made to meet or exceed Government specifications for these high Nickel Alloys.
4. The benefit of Inco's help in solving your metal problems based on wide experience in field and laboratory testing of Nickel Alloys.
5. Inco Nickel Alloy castings made at Inco's own foundry; your assurance of sound, dependable castings.
6. Even castings you previously thought impractical to produce in Monel, Nickel or Inconel® can often be cast by Inco's specialists.

Do you have the problem of selecting a cast alloy to withstand corrosion, abrasion, erosion or other destructive conditions? Let Inco casting specialists study your problem. They may be able to suggest a practical solution. They will also be glad to give you cost and delivery estimates on all rated orders.

In the meantime, write for your copy of "When it's a question of castings . . ."

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

Inco Castings  SAND, CENTRIFUGAL, PRECISION

When inquiring check CP 3620 on handy form, pgs. 2-3

**"We all feel safer since
our Safety Director**

SPECIFIED Scott Air-Paks

TRADE MARK



★ Yes, SCOTT AIR-PAKS give employees working in hazardous fumes complete breathing protection, enabling maintenance and repair jobs to be completed quicker and easier. Men wearing safe, efficient SCOTT AIR-PAKS under such conditions work with confidence because they know they will get all the fresh, cool air they want, no matter how hard they work. Extremely low in operating costs, simple to use and fast in action, Scott Air-Paks insure greater economies in your plant.

Write for Bulletin No. 510 showing all models or call in your Safety Equipment Dealer today!

Thousands of SCOTT AIR-PAKS are helping to make hard jobs easier and safer, throughout the Nation's industries.



FOR SAFETY—FOR SERVICE

**SAFETY EQUIPMENT DIVISION
SCOTT AVIATION CORP.**

242 ERIE ST., LANCASTER, N. Y.

CANADA: SAFETY SUPPLY CO., TORONTO — BRANCHES IN ALL PRINCIPAL CITIES
EXPORT: SOUTHERN OXYGEN CO., 157 Chambers Street, New York 7, N. Y.

When inquiring check CP 3621 on handy form, pgs. 2-3

SAFETY

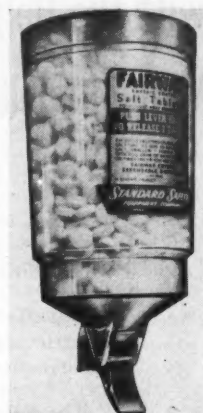
**Plastic dispenser for
salt tablets is
throw-away . . .**

contents are factory-sealed to prevent contamination

Uses: Salt tablet dispenser.

Features: Tablets are sealed in at factory to prevent dust or dirt particles from contaminating them.

Description: Fairway "Crystal" Salt Tablet Dispenser is fabricated



Salt tablets are enteric coated to prevent premature dissolving and discomfort to the user

of transparent plastic. Salt tablets used are enteric coated to prevent premature dissolving of salt and resulting discomfort to the user. Cost is reportedly low enough so that dispenser can be thrown away when empty and another put in its place. Less than five seconds is the time required to effect the replacement. Unit is available in 500 or 1000 tablet size.

(Developed by Standard Safety Equipment Co., Dept. CP, 232 W. Ontario St., Chicago 10, Ill. . . . for more information check CP 3622 on handy form, pages 2 - 3.)

**Lens replacement
made quickly
and easily . . .**

split-joint construction feature of spectacles

Uses: Eye protection.

Features: Split joint construction does away with need for stocking a wide range of frame sizes.

Description: Model 80 Split-Joint Spectacle makes lens replace-

**only \$250.00 buys this modern
Safetyway lift truck**

- This new powerful SAFEWAY Hydraulic unit will lift loads of 1,000 lbs. to a height of 53" easily and safely.
- It operates in narrow aisles and will turn easily in close quarters.
- Combination "Snap on" Plate permits use as platform truck when forks are not required.
- Foot Lever operation and Safety Release pedal permit one man operation with maximum safety.
- Safety hand-operated brakes prevent movement when loading or unloading, provide positive control on inclines.
- Unequaled for materials handling, loading or unloading vehicles, transferring dies or stacking drums and other bulky objects.

Safetyway
INDUSTRIAL EQUIPMENT CORP.
184 N. FRANKLIN STREET
CHICAGO 6, ILLINOIS

**Write or Phone
for Demonstration**
Phone: RAndolph 6-1604 Chicago

When inquiring check CP 3623 on handy form, pgs. 2-3

**KEEP AIR
FRESH**
in confined places
with COPPUS
Design "A" Ventilator

TANK CAR is easily freed of fumes for workers' safety.

CHEMICAL STILL is here ventilated while being repaired.

Improve workers' safety—health—comfort—efficiency. Get rid of dangerous gases, fumes, stagnant air. Coppus Design "A" Ventilator ventilates tanks, tank cars, drums, vats, underground cable manholes, pipe galleries, airplane wing compartments, fuselages. For complete information, write Coppus Engineering Corporation, 389 Park Ave., Worcester 2, Mass. Sales Offices in Thomas' Register.

Other "Blue Ribbon" Products in Chemical Engineering Catalog, Refinery Catalog, Best's Safety Directory and Mining Catalogs.

COPPUS
"BLUE RIBBON" PRODUCT

When inquiring check CP 3624 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

ment a quick and easy operation with no recourse to optical repair stations or the special heaters that often cause stretched or warped frames. Removing a temple hinge screw and the frame clip permits spreading the "split-joint", which allows the lens to fall out. Reversing the procedure permits new lenses to be inserted quickly and easily.

Frames are available in two sizes to hold lenses of either 45 x 48 mm or 42 x 44 mm. Any safety lens, prescription or plano, may be inserted. Manufacturer provides the new frames in both sizes either without lenses or complete with regular hardened safety glass lenses (6.0 base or 1.25 base curves) in clear or 1, 2 or 3 green shades.

(Model 80 spectacles are available from Dept. CP, Watchmoke Optical Co., 232 W. Exchange St., Dept. N 64, Providence 3, R. I. . . or for more information check CP 3625 on convenient Reader Service slip between pages two and three.)

Safety data on ethyl acetate

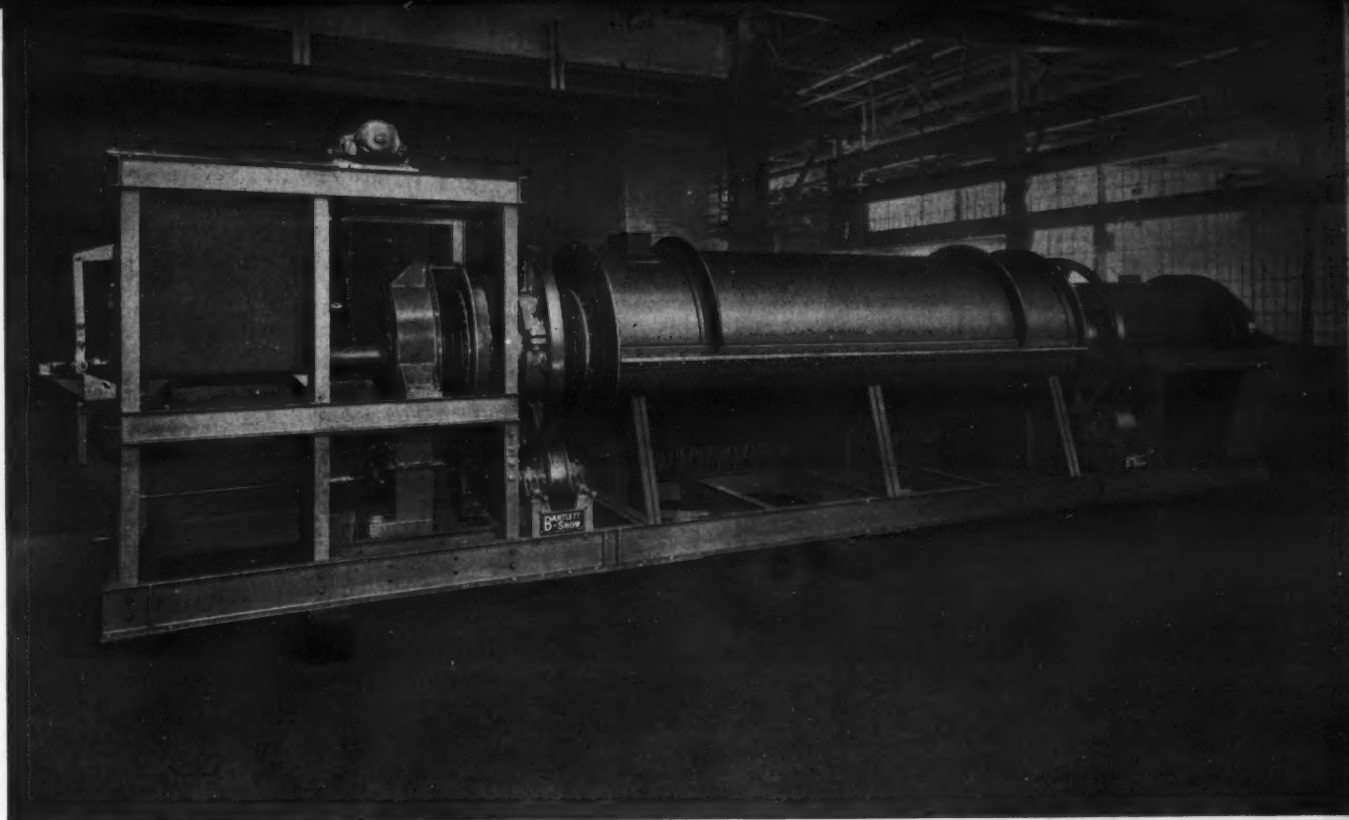
Safety rules and regulations for handling, storing, and shipping of ethyl acetate are described in detail in 16-page safety data sheet.

Sheet points out that while ethyl acetate is classified by the ICC as a "flammable liquid", and its vapors, when mixed with air, are likely to produce explosions when ignited, the material can be handled with safety if employees are properly educated and are familiar with the liquid's hazards.

Publication also includes ICC regulations regarding loading and unloading, and first aid procedures to be followed in case of exposure to excessive vapors or excessive contact with skin.

To obtain Safety Data Sheet SD-51 remit 25c direct to the Manufacturing Chemists' Association, Incorporated, 246 Woodward Bldg., Washington 5, D. C.

For more information on product at right, specify CP 3626 . . . see information request blank between pages 2 - 3.

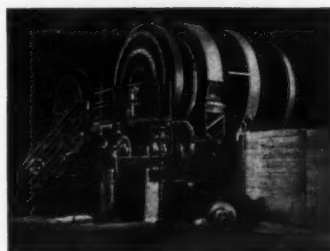


continuous

Calciner and Cooler

... permits materials to be processed continuously at temperatures from 900° F to 2100° F in a reducing, oxidizing or neutral atmosphere, cooled, and discharged at 200° F or lower.

● The chrome nickel alloy tube can be lined if desired, to permit processing without bringing the material into contact with metal at elevated temperatures. Feed hopper, variable feeder, seals and breechings are all supported on a single frame to assure proper alignment and efficient trouble-free operation. Our complete laboratory facilities enables us to determine accurately the time cycle, temperature, special atmosphere and other conditions needed to produce a given result, before the production unit is designed or built. Let us work with you on your next job!



Two Bartlett-Snow Batch Rotary Kilns, Preheating Charges for Electric Furnaces.



Steam Jacketed Dish Bottom Stainless Steel Batch Dryer Specially Built for Drying a Fine Catalyst Without Dust Loss.

DESIGNERS

ENGINEERS

**BARTLETT
B-SNOW**
CLEVELAND 5, OHIO

FABRICATORS

ERECTORS

Dryers • Coolers • Calciners • Kilns
"Builders of Equipment for People You Know"

Heating?

Cooling?

Air
Conditioning?

Process?

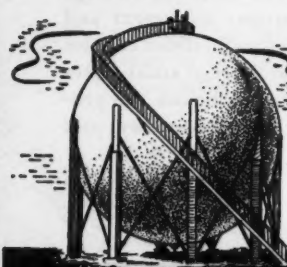


ASK THE AEROFIN MAN

*About Practical
Heat Exchange*

There is a competent Aerofin heat-transfer engineer near you—qualified by intensive training and long experience to find the right answer to your own particular heat-exchange problem—and backed by the research and production facilities of the pioneers in light-weight extended surface.

Ask the Aerofin Man.



*Throughout the
Chemical Industry—*

**Aerofin units do the job
Better, Faster, Cheaper**

AEROFIN CORPORATION

410 South Geddes St.
Syracuse 1, N. Y.

*Aerofin is sold only by manufacturers of nationally
advertised fan system apparatus. List on request.*

When inquiring check CP 3627 on handy form, pgs. 2-3

SAFETY

**Works against static electricity
caused by stock moving
over or thru rolls . . .**

requires no external source of power thereby eliminating equipment that might fail

Uses: Removing static electricity. Units are particularly effective in eliminating those static electricity hazards that arise where moving stock becomes highly electrified by passing over or through systems of rolls.

A few examples of industrial operations where the units have been used include: 1) calendering of rubber plystock, plastic films, and paper; 2) spreading or coating of rubber or plastic compounds onto textiles, paper or leather; 3) drying in various forms by festoon, conveyor or vertical dryers; 4) slitting and bias cutting of paper, textiles, coated products and plastic films; 5) passing of paper, textiles, plastics and rubber sheeting or films through systems of heating or cooling drums; and 6) let-off from rolls of paper, textiles, plastic, and rubber sheeting or films.

Features: Requires no external source of power thereby eliminating high voltage transformers, high tension cables and fittings which might fail in service.

Description: Magic Wand neutralizer employs wire bristles variously disposed along a wooden bar and grounded to the processing machine. Ionization of the air between the Magic Wand and the electrified stock occurs from the voltage induced on the grounded wire bristles by the static electricity residing on the stock.

The wire bristles are energized only when the stock is electrified; and, the higher the electrification of the stock, the more the intervening air is ionized. Bristles are composed of small diameter, spring-brass wire. They utilize no sharp points that might damage the stock or injure personnel.

(Available from Herman H. Sticht Company, Inc., Dept. CP, 27 Park Pl., New York, N. Y. . . . or for more information, check CP 3628 on handy form, pages 2 and 3.)

**Quickly surveys process steps
and tells of electrostatic
build-up . . .**

portable unit does not require technically trained personnel to operate

Uses: Detects electrostatic charges and electrostatic induction on moving or stationary equipment or materials. Stated to be in use by processors of textiles, rubber, chemicals and paper. Presence of such charges at various steps of material processing, of course, can constitute a serious fire hazard. Preventive or remedial steps can be taken readily when relative magnitude of charges are known in suspected areas.

Features: Instrument is portable and weighs less than 4 lb. It does not require technically trained personnel to operate.

Description: Electrostatic Locator Type D contains its own source of power consisting of a stand-

Wherever
it's

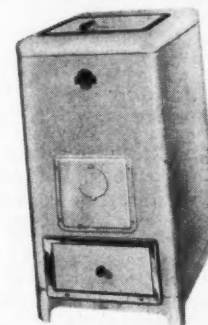
HOT

specify

Sicon

NEW
IMPROVED
SILICONE-BASE
HEAT-RESISTANT
FINISH

**WITHSTANDS 500°-550°F
in COLORS**



SICON, in gleaming white, was chosen for this home incinerator because of its high resistance to heat, its exceptional color and gloss retention, and its adhesion and film stability. Sicon has revolutionized finishing wherever high temperatures pose a problem. Write for latest color application data.

Sicon

Silicone-Base Finish is
manufactured exclusively by

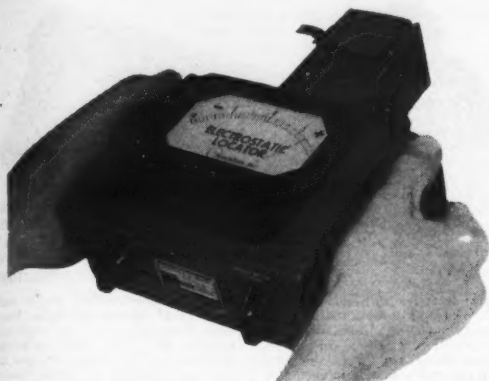
**MIDLAND
INDUSTRIAL FINISHES CO.**
Waukegan, Illinois
ENAMELS • SYNTHETICS
LACQUERS • VARNISHES

When inquiring check CP 3629
on handy form, pages 2 - 3.

CHEMICAL PROCESSING

SAFETY

ard flashlight cell and two standard 4½ volt dry cell batteries. Unit is reportedly very sensitive with pro-



Portable electrostatic charge detector contains its own source of power

vision made to permit reduction of sensitivity to 1/10th or 1/100th. A charged area can be quickly located and its extent determined.

Those parts of the instrument most likely to be affected by moisture and dust are sealed to assure trouble-free life. Operation and maintenance instructions are permanently lettered on the cover of the instrument.

(Electrostatic Locator Type D is available from Specialties, Inc., Dept. CP, Skunks Misery Rd., Syosset, N. Y. . . . or for more information check CP 3630 on handy form, pages 2 and 3.)

Avert accidents caused by improperly tensioned band saw blades

Some accidents resulting from broken band saw blades have been due to improper tension. Here is how a member of a plant safety committee solved the problem through use of an actuating switch.

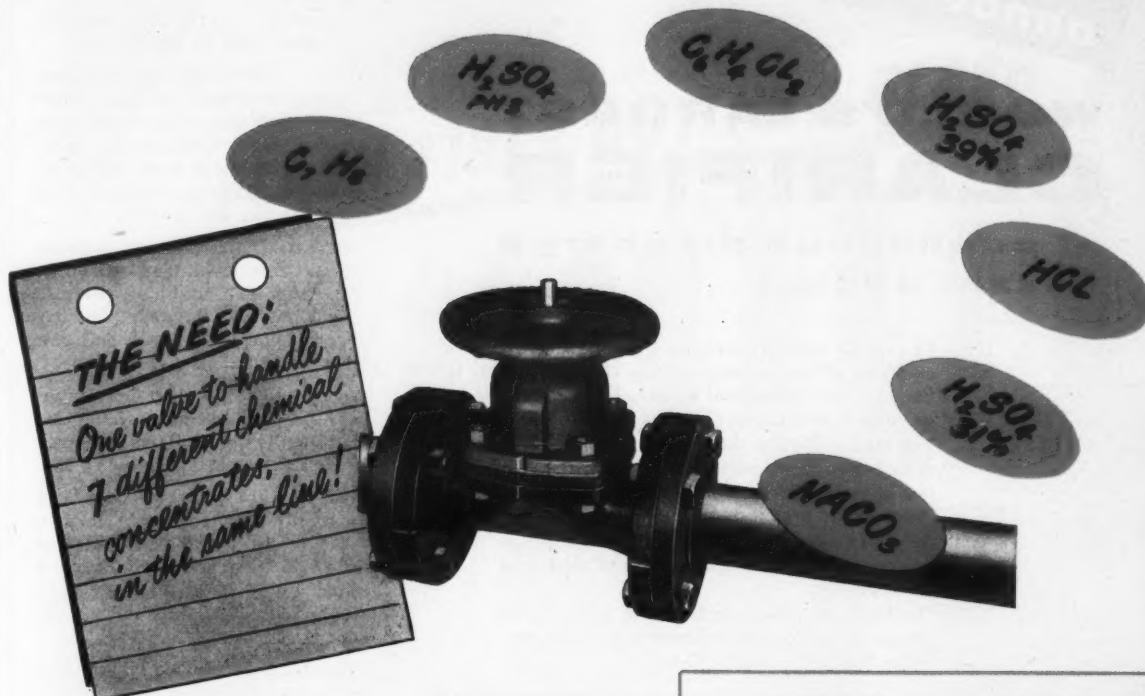
The tension of a band saw blade is regulated by a "band screw" on a sliding sleeve at either the upper or lower band saw wheel. The position of the sleeve indicates blade tension. A switch is connected so that when the sleeve travels beyond a given point, the switch is actuated. This turns on a warning light, indicating to the operator that the blade tension is incorrect and that the machine should be shut off and adjusted immediately.

An additional safety device can be easily included by installing a relay in the circuit to automatically stop the saw blade should tension exceed safe limits.

Switch used was a Micro Precision Switch and application was devised by Joe Daley of Stone Container Corp. of Chicago, Ill.

(Micro switches are products of Micro, A Division of Minneapolis-Honeywell Regulator Co., Dept. CP, Freeport, Ill. . . . or for more information check CP 3631 on handy form, pages 2 and 3.)

What valve would you specify?



A manufacturer was looking for one valve which would handle seven chemicals of varying temperatures and concentrations, one after another, in the same line. They were . . .

SODIUM CARBONATE	PH 9	90°C
HYDROCHLORIC ACID	8%	100°C
SULPHURIC ACID	PH 3	20°C
SULPHURIC ACID	39%	42°C
SULPHURIC ACID	31%	15-20°C
TOLUENE	(Full strength but associated with traces of other chemicals)	
ORTHODICHLOROBENZENE — Cleaning Solvent		

Valves suitable for use with these chemicals individually were available. But only one valve was found which could handle them in combination. It was the Grinnell-Saunders Diaphragm Valve, glass lined, with chemically inert KEL-F Diaphragm. The Grinnell KEL-F diaphragm not only prevented the liquid from attacking working parts, but it eliminated leakage around the stem.

Piping in today's complex industrial plants is an exacting science involving the handling of highly corrosive fluids, gases, compressed air, beverages, foods and suspended solids . . . in lines where corrosion, abrasion, contamination, clogging, leakage and maintenance are costly factors. Under such conditions, the amazing adaptability of the Grinnell-Saunders Diaphragm Valve explains its acceptance by industry after industry. For further details, write for Grinnell-Saunders Diaphragm Valve Catalog.

GRINNELL

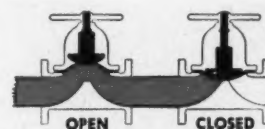
WHENEVER PIPING IS INVOLVED



Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

When inquiring check CP 3632 on handy form, pgs. 2-3



Features which have made Grinnell-Saunders Diaphragm Valves the specified valve in many different industries:

Streamlined flow. Smooth, streamlined passage, without pockets. Frictional resistance at a minimum.

Leak-tight closure against grit, scale, suspended solids.

Working parts absolutely isolated from fluid. Diaphragm completely seals off working parts from fluid in the line.

Body, lining and diaphragm materials to meet service condition. Bodies stocked in cast iron, malleable iron, stainless steel, bronze and aluminum; other materials on special orders. Valve bodies lined with lead, glass, natural rubber or neoprene. Diaphragm materials of natural rubber or synthetics.

Minimum maintenance. No refacing or reseating is required. No packing glands to demand attention. New diaphragm can be inserted without removing valve body from the line.

MERCO
announces

WORLD'S LARGEST CLARIFIER

of continuous discharge
nozzle design

To provide retention time for greatly increased clarifying efficiency, Merco's new C-3000 clarifier has extra large bowl volume, high centrifugal effects and tremendous disc area.

The Merco C-3000 fills needs not heretofore served. Its unique performance justified flying one of these 6½ ton centrifuges across the continent for an urgent application.

Successful new applications include separations in atomic energy industries, bentonite, alum, and chlorophyllin.

The Merco C-3000 centrifuge can solve a wide range of clarification problems in your industry. Write today for bulletin C-41.



Note the tremendous size of the C-3000 separating bowl to the left. The bowl shown to the right would ordinarily be considered large.

MERCO CENTRIFUGAL CO.

150 GREEN STREET • SAN FRANCISCO 11, CALIFORNIA

When inquiring check CP 3633 on handy form, pgs. 2-3

SAFETY

Add two new widths
to safety
grating . . .

non-skid surface is one-piece
sheet steel or aluminum

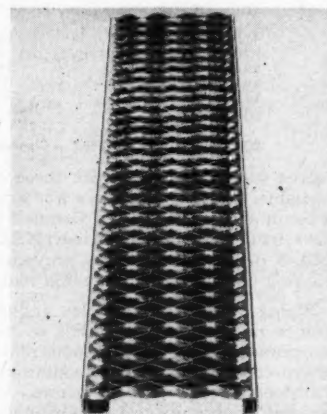
Uses: Two-diamond piece grating was developed for engine room steps, safety step ladders and stair treads. Eight-diamond piece grating is suitable for work platforms, catwalks, landings, flooring and miscellaneous use.

Features: Metal for forming product into longitudinal channels, step risers, step nosing or moldings is integral with the grated surface, thereby eliminating need and cost of welding in many uses.

Test results show that in sections 20" wide and 48" long, grating has withstood over 100,000 one-inch oscillations without damage.

Description: Safety Grip-Strut grating is now available in two new widths: two-diamond piece is 4¾" wide and eight-diamond piece is 19" wide. These widths are in addition to three other available sizes: 7, 9½ and 11¾".

Material of construction is 12 to 16 gage sheet steel or aluminum. Grating appears as a diamond shaped pattern in which the percentage of

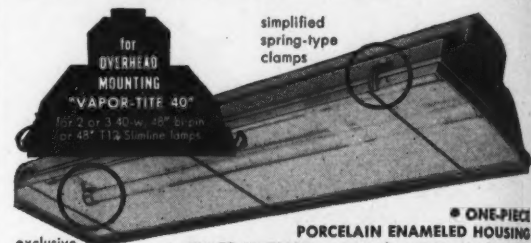


Presents anti-skid surface on edges
of a series of formed struts

open area is in excess of 75% of the total reticulated surface. Struts or vertical members are joined by integral saddles to create lateral struts of great strength.

(Safety Grip-Strut is available from The Globe Co., Dept. CP, 4000 S. Princeton Ave., Chicago, Ill. . . . or for more information check CP 3634 on form, pages 2 and 3.)

BENJAMIN VAPOR-TIGHT FLUORESCENT LIGHTING UNITS LICK HUMIDITY AND DIRT PROBLEMS

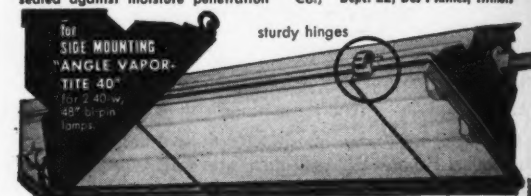


exclusive
"Springlox"
lampholders

- SEALED INTERIOR—no place for rust to get a foothold!
- COVER UNSNAPS IN A JIFFY
- LAMPS CUSHIONED AGAINST VIBRATION

Where excessive dirt, dust, smoke, corrosive fumes or moisture-laden air present lighting problems, the best answer is Benjamin Vapor-Tight Lighting Equipment. These units withstand such adverse atmospheres with a minimum of maintenance and trouble-free performance. They're sealed against moisture penetration

by an extruded rubber gasket and moist-proof conduit entrances. They defy humidity with an over-all coating of "Life-Time" porcelain enamel. For full details on how to lick your problems of lighting humid and dirty locations, send for FREE BULLETIN VT, Benjamin Electric Mfg. Co., Dept. LL, Des Plaines, Illinois

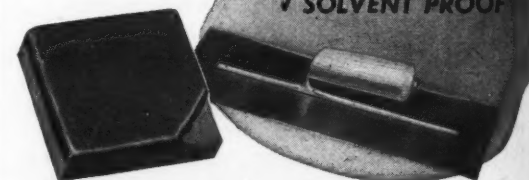


When inquiring check CP 3635 on handy form, pgs. 2-3

Ceilcrete

a stonelike corrosion proof
trowelled on surface

- ✓ ACID PROOF
- ✓ ALKALI PROOF
- ✓ SOLVENT PROOF



TOPPING for FLOORS • WALLS
ACID HOLDING TANKS • WASTE
DISPOSAL SYSTEMS, ETC.

THE CEILCOTE COMPANY
4832 Ridge Road, Cleveland 9, Ohio

Send for technical data
on its application, corrosion
resistance properties



When inquiring check CP 3636 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Announce quantity production of chlorobromomethane for fire extinguishing . . .

in liquid form, compound is adaptable to standard types of vaporizing extinguishers

Commonly known as "CB", chlorobromomethane is reportedly 1.5 to 6 times as effective as other liquid extinguishing materials in current use. Manufacturer has announced quantity production for use in fire extinguishing equipment. Extinguishers using "CB" can be smaller and lighter in design. In addition, a waste fire attacked with "CB" has less tendency to flash back; there is less soot, smoke and irritating or corrosive fumes.

In liquid form, the compound is adaptable to the usual types of vaporizing extinguishers. Because of its low freezing point (-123°F), it requires no depressant. It is stated to have practically no corrosive effect on steel, brass or lead unless mixed with water. Pressurization can be accomplished with Freon, CO_2 , CO_2 and nitrogen, or air.

(Offered by Michigan Chemical Corp., Dept. CP, Saint Louis, Mich. . . or for more information check CP 3637 on handy form, pages 2 and 3.)



Centralized station for safety equipment and supplies is innovation in General Electric Company's chemical materials plant at Schenectady. This view of station with doors open shows variety of safety gear kept in readiness against practically any emergency. Such grouping eliminates the danger that an employee will be unable to locate the masks or a stretcher or fire extinguisher in a hurry when he needs them. Information courtesy of Mine Safety Appliances Company



BLAW-KNOX *Automatic* FOG SYSTEMS

Deluge Systems, Wet Pipe Systems, Dry Pipe Systems, Water Spray and Fog Systems, Rate-of-Rise Sprinkler Systems with new improved Spray Heads, Foam and Carbon Dioxide Extinguisher Systems . . . listed by Underwriters Laboratories, Inc. and approved by Factory Mutual Laboratories.



Here is a real fire killer . . . engineered for the hazards of this butadiene tank farm, and operating on plant water pressure. In the event of a critical temperature rise anywhere within the protected area, not a second is lost. A quenching deluge of water-fog smothers the hot spot at once. Other nozzles go into action to cool off adjacent tanks, and alarms are sounded instantaneously. To get the most effective fire protection ask for a Blaw-Knox engineer to make a survey of your property and submit an estimate . . . There is no obligation.

BLAW-KNOX

BLAW-KNOX COMPANY
BLAW-KNOX SPRINKLER DIVISION
PITTSBURGH 33, PA.
CEdor 1-0700

When inquiring check CP 3638 on handy form, pgs. 2-3

ROTARY UNION

(Reg. Trade Mark)



A REVOLVING STEAM CONNECTION

Pipe sizes 1/4" through 3"

If it Revolves... We Seal It

Getting heating or cooling gases and liquids into revolving shafts and drums, without leakage, has been our specialty since 1936. Except for some work for the Armed Services, we have devoted all of our considerable resources to this job.

Over 40 standard types and sizes of ROTARY UNIONS cover all common applications. Direct factory engineers are available at the offices listed below to make proper recommendations or to work out unusual problems.

The ROTARY UNION is the most compact, efficient, and long lasting revolving joint you can use. It can be installed in a few minutes and will give many months of perfect service without mechanical maintenance of any kind. Three years service is not uncommon. The ROTARY UNION is self-adjusting to pressure and is built so that stress or strain is removed from moving and sealing parts. Requires only 20% to 30% of the usual power. Costs no more than ordinary joints.

You'll save time, labor, and expense by installing ROTARY UNIONS on all of your revolving equipment. Contact our nearest office for consultation or write Dept. 9C for our Catalog.

"WHERE Good Connections COUNT"

PERFECTING SERVICE COMPANY

332 Atando Avenue (Home Office and Factory) Charlotte, N. C.
Atlanta, Chicago, Cleveland, Philadelphia, Providence, New York, Montreal, Toronto

When inquiring check CP 3639 on handy form, pgs. 2-3

SAFETY

Pocket-size unit shows total gamma and X-ray dosage...

rugged instrument constructed with inert materials

Uses: Designed for radiation monitoring in atomic research, industrial radiology and radio-isotope applications.

Features: Unit is self-contained and requires neither batteries nor external charging devices. Small size and light weight—it is smaller than a cigarette package — plus a dial which is readable even in poor light make instrument easy and convenient to use.

Description: Gamatek radiation detector accurately indicates on a direct-reading scale the total dosage of gamma and X-rays to which a body or area has been subjected.



Small size and light weight contribute to ease of operation

Readings are in standard milliroentgen units with a full-scale reading of 250 milliroentgens.

The Gamatek consists basically of a ruggedly constructed moving-vane electroscope. It is constructed of inert materials and is tightly sealed to resist environment conditions. By observing the time it takes the needle to move across the scale and referring to a table on the back of the instrument, radiation rate can be calculated.

(Gamatek is available in limited quantities from Consolidated Engineering Corp., Dept. CP, 300 N. Sierra Madre Villa, Pasadena 15, Calif. . . . or for more information check CP 3640 on handy form, pages 2 and 3.)

When inquiring check CP 3641 on handy form, pgs. 2-3

Not welded, not riveted, not expanded, all one piece of material, gives a non-skid surface in all directions, a diamond shaped pattern with open space area in excess of 75% of surface, easily cleaned, sanitary. Simple to install, ideal for on-the-job fabricating, replaces existing grating with no supporting structural changes necessary. Strong yet light in weight. Ideal for stair treads, work platforms, catwalks, flooring, running board steps, in fact for any purpose where safe flooring is a factor. Available in steel or aluminum. Write for new catalog, showing new low prices, methods of application, typical installations and list of nationally known users.



Distributors in all principal cities.
GRIP-STRUT division
THE GLOBE COMPANY
Manufacturers since 1914
4006 S. Princeton Ave. • Chicago 9, Ill.

When inquiring check CP 3642 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Gives high friction surface that is unaffected by water or oil . . .

heavy paste material consists of plastic binder and aluminous oxide abrasive grain

Uses: To impart non-skid characteristics to metallic surfaces, such as ladders, which become slippery when coated with oil or water.

Features: Because of its high chemical resistance, coating offers protection as well as high friction characteristics.

Description: Slip Proof II is a heavy paste material which consists of a plastic binder and a luminous oxide abrasive grain. Binder employed is a thermosetting material which cures catalytically through the addition of a resinous hardener supplied as a separate component. After the hardener has been added in the ratio of one part by weight of the abrasive compound, the material is applied by trowel to the surface to be coated.

When the material is cured in approximately five hours time, it is reportedly impervious to gasoline, oil, water, alcohol and practically all common reagents except the ketones. It is also highly resistant to both acids and alkalis with the exception of nitric acid.

(Available from National Engineering Products, Inc., Dept. CP, Washington Bldg., Suite 435, Washington 5, D. C. . . or for more information check CP 3643 on handy form, pages 2 and 3.)

Whopping 28,160,000 man hours without a lost-time accident . . .

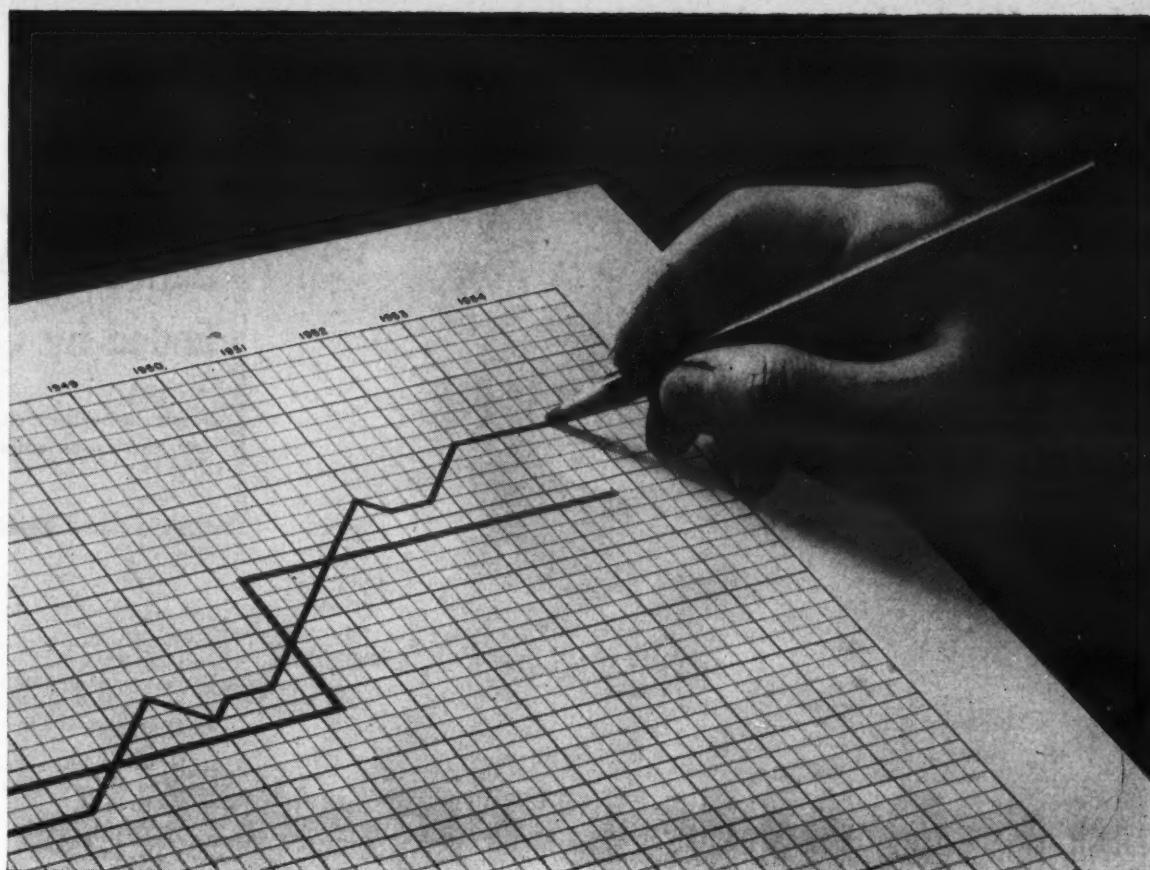
represents a period of four years for the 3500 employees of rayon plant

The Du Pont Company's Old Hickory, Tenn. rayon plant recently established an enviable record in industrial safety. It became the world's safest industrial plant with a total of 28,160,000 man-hours without a lost-time injury and the employees are still adding to the total.

Representing more than four years, without a lost-time accident, this record is the second one established by the plant in its 27-year history. The plant's first mark was set in 1937 when it completed 11,000,000 exposure hours without a major injury. It began that record in 1935. Employees at the plant total 3500.

(Information courtesy of E. I. duPont deNemours & Co., Inc., Dept. CP, Wilmington 98, Del.)

Don't Overlook Wood as a construction material.
Properties of domestic woods are
tabulated on page 226.



Caution: dangerous curves

Keeping your fire protection properly balanced with changes in processes as well as ups and downs in production is vital to efficient, profitable operation.

You'll find your best answer to this serious fire problem which is currently confronting industry by installing an expandable, fully approved C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Changes in your fire protection requirements are easily and economically provided for with a C-O-TWO Low Pres-

sure Carbon Dioxide Type Fire Extinguishing System by initially installing an oversized storage tank and adding where necessary the supplementary discharge facilities at a later date.

Flexibility is the keynote . . . the low pressure carbon dioxide storage tanks range in capacity from one to fifty tons . . . discharge facilities can be either manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these . . . especially installed to fit your particular needs.

WHEN BUSINESS STOPS . . . INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today . . . our extensive experience over the years is at your disposal without obligation. Get the facts now!



MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT
Squeeze-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide
Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

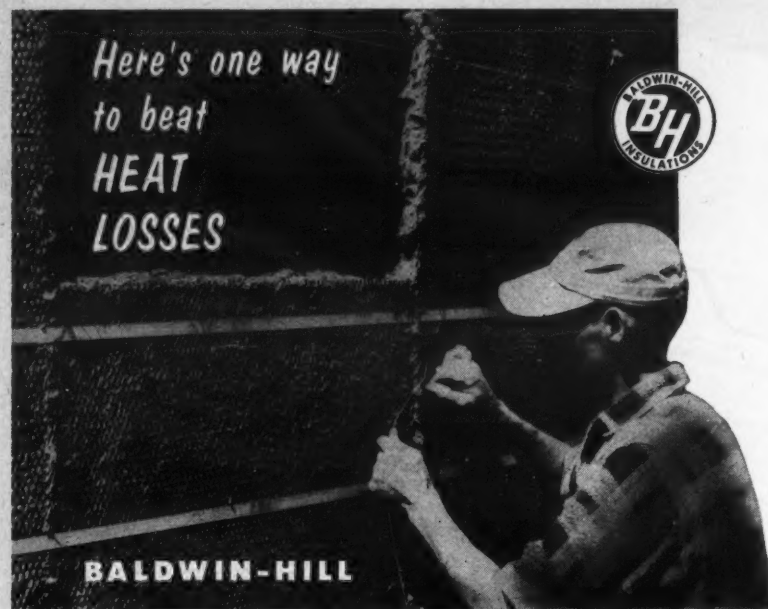
C-O-TWO FIRE EQUIPMENT COMPANY NEWARK 1 • NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. • TORONTO 8 • ONTARIO
Sales and Service in the Principal Cities of United States and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

When inquiring check CP 3644 on handy form, pgs. 2-3

You find the solution to many problems in **CHEMICAL PROCESSING**

Here's one way
to beat
**HEAT
LOSSES**



BALDWIN-HILL

BLANKETS

When you lose heat, you lose operating efficiency and, what's more, those escaping Btu waste your money. Investigate the savings you can make with B-H rockwool BLANKETS. Effective up to 1200° F., they provide exceptional insulating efficiency. High temperature-resisting B-H rockwool is felted in large sheets between various types of metal fabrics to form blankets which are easily applied to large equipment. The soft fiber edges of one blanket merge with the edges of adjoining blankets to form an unbroken layer of insulation. Step up operating efficiency... save fuel... insulate with B-H BLANKETS. For the correct type and method of application best suited to your job, call on B-H Engineered Insulation Service.

**SEE OUR
CATALOG
IN
SWEET'S**



Baldwin-Hill

Clip on signed letterhead and mail

**TEAR
OUT**

BALDWIN-HILL COMPANY, 409 Breunig Ave., Trenton 2, N. J.

Please send complete information on

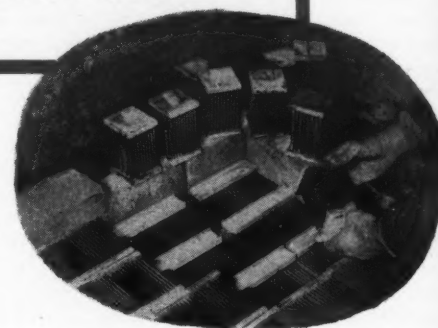
- ☐ **BLANKETS**... Metal-reinforced, flexible, felted, rockwool insulation
- ☐ **NO. 1 INSULATING CEMENT**... All-purpose, rust-inhibiting, plastic cement
- ☐ **MONO-BLOCK**... Rigid, felted, rockwool block—for high and low temperature use
- ☐ **POWERHOUSE CEMENT**... High adhesion, rockwool, insulating-finishing cement

When inquiring check CP 3645 on handy form, pgs. 2-3

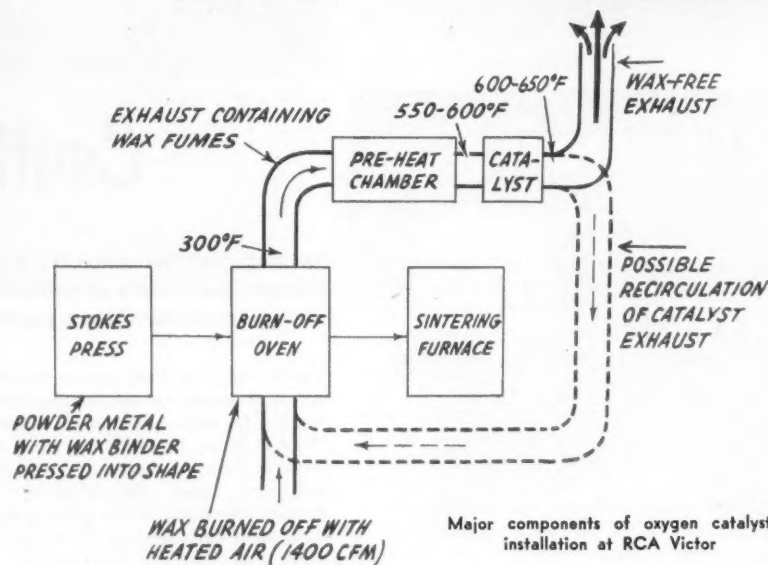
*construction
and maintenance*

Serious In-Plant Odor Problem Ended by Catalytic Oxidation

Bonus benefits include elimination of a fire hazard and more consistent quality of product



At RCA the 204 oxygen catalysts were placed in a bed in the same manner as illustrated in this photograph of units installed in an exhaust stack of Enamelstrip Corp., Allentown, Pa., where a similar solvent-fume air pollution problem was solved



Major components of oxygen catalyst installation at RCA Victor

PROBLEM: In making its ferrite (powdered metal) components, RCA Victor Division, Radio Corporation of America, Camden, N. J., uses a wax binder to hold the parts together before final pressing and sintering. After parts are formed and before they can enter the sintering furnace, wax must be eliminated

in a burn-off oven. This oven had been exhausting about six pounds of wax an hour to the atmosphere. Resulting smoke had a strong odor like that of burnt cork and proved irritating to the eyes.

The in-plant pollution problem was aggravated by the location of the stack handling burn-off exhaust. It rose only

ten feet above the two-story manufacturing building which was located no more than 50 yd from the engineering office building. Under certain wind conditions, paraffin smoke was carried directly into the middle stories of the building — seriously hampering office working efficiency.

Company considered alternate methods for eliminating wax smoke. Fumes could be collected, condensed, filtered, or burned. It was decided that some method of burning would give the most positive results with a minimum of maintenance and operating difficulties.

Burning, in the ordinary sense of direct ignition of fumes, would have been costly. A large volume of fume-air mixture (1400 cu ft per min) would have to be brought up to ignition temperature — 2000°F or more. This in turn would require high fuel consumption, a large combustion chamber, and elaborate insulation and stack construction to withstand the high temperatures involved.

Catalytic oxidation, on the other hand, could provide a means for burning volatile wastes at temperatures well below the ignition point.

Solution: To combat its wax-laden exhaust, RCA installed a bed of 204 oxygen catalysts above the burn-off oven. Each individual unit, measuring $5\frac{1}{2}$ " long, $3\frac{1}{8}$ " high, and 3" wide, is made up of two thick porcelain end plates and, between them, a porcelain spacer bar and 73 coated porcelain rods.

Paraffin fumes flow across these rods. Combustion of fumes occurs at surface of rods where they are coated with a .003" film of catalytic agent — catalytic alumina and platinum alloy.

The catalyst normally supports combustion at about 500°F. Since the burn-off oven exhausts at about 300°F, a pre-heat combustion chamber was installed to raise oven exhaust to this design temperature. Catalyst, in turn, contributes a heat rise of about 50-100°F to the exhaust stream.

Results: RCA is now exhausting a clean, safe effluent to the surrounding atmosphere. Irritating smoke containing wax fumes and particles that formerly plagued employees working in the nearby eight-story office building, has been completely eliminated. Plant engineers may, in the future, recirculate catalyst exhaust back to burn-off oven to recover heat developed by both pre-heat burner and catalyst itself.

In ending its contamination problem, company got two bonus benefits through catalyst operation. Before catalytic oxidation a large part of entrained wax had been depositing in the oven stack. Resulting build-up of wax obstructed air movement through oven. This gradual change in oven conditions made it difficult to maintain consistently high quality of production. Paraffin fumes also showed a tendency to collect in pockets above the oven — forming a continual fire and explosion hazard.

Removal of wax fumes by catalytic oxidation has helped solve both the product quality and the

(Continued on next page)

Everywhere you
LOOK..

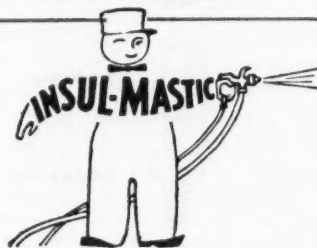


INSUL-MASTIC Coatings Provide Long-Lasting Protection

Practically every pipe and vessel in the plant section above
is coated with INSUL-MASTIC, to prevent corrosion.

*Think first of the
coatings that last!*

**TAKE ADVANTAGE OF OUR
CONSULTANT SERVICE.** Don't
risk needless future maintenance.
Our engineers can tell you whether
or not your construction or insulation
needs a protective coating. There
is no obligation. Write today!



Acid vapors rain almost constantly over the steel structures in the photograph. That is why INSUL-MASTIC was chosen several years ago to keep this equipment from corroding. Acid laden water used to quench burning coke, picks up more acid from the coke and fills the air with clouds of corrosive steam. It is more than ordinary protection can stand, but INSUL-MASTIC has very capably resisted these acid vapors for years. It will continue to prevent corrosion here for many, many more years.

In chemical plants everywhere INSUL-MASTIC is preventing destruction by acids, alkalis and moisture vapor. These tough coatings are unharmed by sunlight and weather. They can be sprayed over bare metal or over insulation. They keep moisture and corrosive chemicals from destroying tanks, pipes, other chemical vessels and supporting structures.

These long-life coatings can greatly reduce your maintenance operations and extend the life of your equipment. Write today for the address of your nearest INSUL-MASTIC representative.

Insul-Mastic

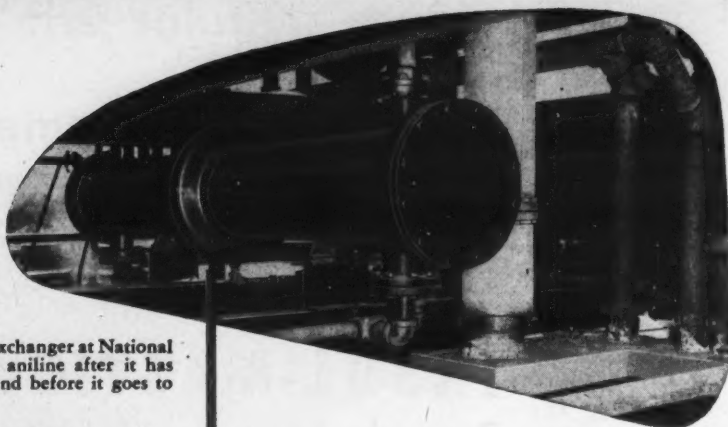
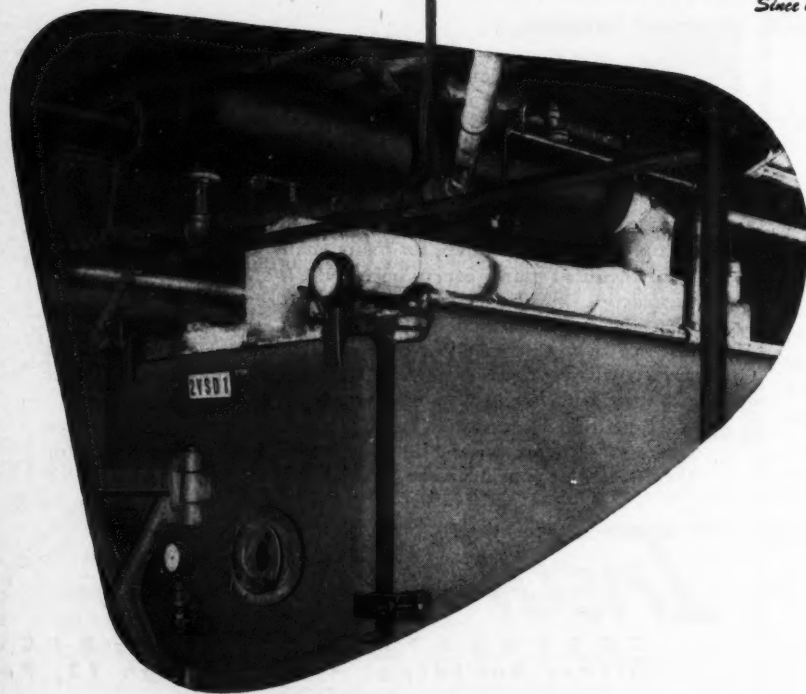
CORPORATION OF AMERICA
Oliver Building • Pittsburgh 22, Pa.
Representatives in Principal Cities

When inquiring check CP 3646 on handy form, pgs. 2-3

• ADSCO Heat Exchanger at National Aniline sub-cools aniline after it has been condensed and before it goes to storage.

WHERE A HEAT EXCHANGER MUST BE GOOD

• ADSCO Heat Exchanger (insulated) above vat drier at National Aniline condenses organic acid vapor in tubes with water or brine in shell. Exchanger equipped with shell expansion joint.



The ADSCO Heat Exchangers shown on this page are installed in the Buffalo, N. Y., plant of the National Aniline Division of Allied Chemical & Dye Corporation. The manufacturing processes of National Aniline require engineered equipment of the highest caliber. . . . ADSCO, in business since 1877, offers the chemical processing industry a complete line of carefully-engineered heat exchangers built to customers' specifications or to our recommended designs. Inquiries are cordially invited.

AMERICAN DISTRICT STEAM COMPANY, INC.

NORTH TONAWANDA, NEW YORK

Since 1877



EXPANSION JOINTS



TRAPS



STRAINERS



SEPARATORS

CONSTRUCTION & MAINTENANCE

safety problem at the company. Both the pre-heat chamber and catalyst housing are mounted above the burn-off oven on a steel platform nine ft above the floor. Compact installation minimizes travel distance of wax fumes and prevents accumulation of wax in duct-work.

Catalyst units sit one foot deep in an insulated chamber 42 inches square. An additional 18" of depth provides inspection area. Insulated combustion chamber is 90" long, 42" wide, and 42" deep.

(Direct-fired gas heater complete with automatic ignition and safety devices was supplied by Bryant Industrial Div., Affiliated Gas Equipment, Inc., Dept. CP, 17825 St. Clair Ave., Cleveland 10, Ohio. Pre-heat burner and combustion chamber design was handled by J. V. Calhoun Co., Dept. CP, Bala-Cynwyd, Pa.)

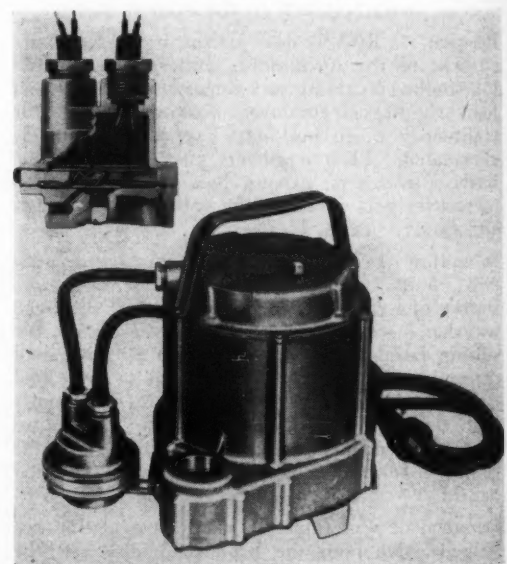
(Oxygen catalyst units, Oxycats, are a product of Oxy-Catalyst, Inc., Dept. CP, Wayne, Pa. . . . or for more information check CP 3648 on handy form, pages 2 and 3.)

Entire pump and parts designed for submerged operation in sump or vault

Uses: For use in sumps, underground vaults, in transferring liquids, as contractor's portable pump, and for general utility use.

Features: Entire unit — motor, pump and switch — is said to be absolutely watertight and is designed to operate completely immersed in liquid. It will fit into a 12" cube.

Description: Watertight electrical connections positively seal out water, according to manufacturer. Entire motor is enclosed in a heavy bronze or cast



Unit will fit into a 12" cube

When inquiring check CP 3647 on handy form, pgs. 2-3

Check the
Liquid Level
from Anywhere
in the
Room

with the
**NEW
CONVEX
SCALE**
**Jerguson
TRUSCALE**
Remote Reading
Gage



Compensated Mono-
metric Gage meets
new interpretation
of the boiler code
for WSP of 900 psi
or higher.

You get full 180° visibility . . . so you can read the liquid level from any point from which you can see the gage . . . with the New Convex Scale now available on Jerguson Truscale Remote Reading Gages. Scale markings are directly on the convex face and the indicator goes clear around the convex surface. You can stand at one end of the control room and instantly check your whole line up of Truscale Gages.

Jerguson Truscales give you instant remote readings of liquid levels of boilers, deaerating tanks, etc. . . . with the amazing accuracy of 1/2 of 1% of scale reading. And with the New Convex Scale you make these readings from any angle . . . accurately, without distortion. Truscales also available with lights, horns and Truscale Repeaters.

Write today for complete data on
Truscale Gages with the New Con-
vex Scale.

JERGUSON

Gages and Valves for the
Observation of Liquids and Levels

JERGUSON GAGE & VALVE COMPANY
100 Fellsway, Somerville 45, Mass.

Offices in Major Cities
Bailey Meters & Controls, Ltd., London, Eng.
Contrôle Bailey, Paris, France

When inquiring check CP 3649
on handy form, pages 2-3

CONSTRUCTION & MAINTENANCE

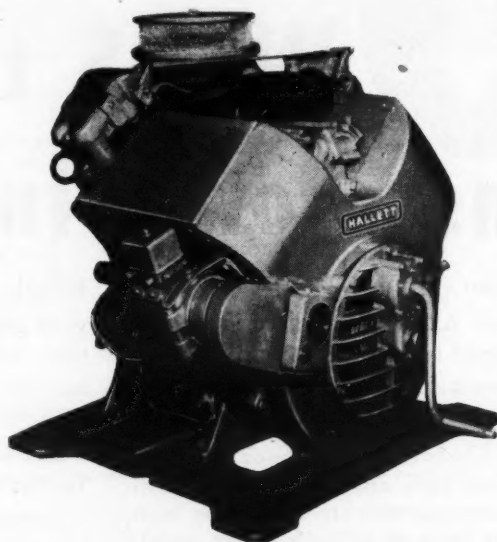
iron case and runs submerged in insulating oil. This provides lubrication and heat dissipation. All critical wearing parts run in oil bath. Maximum capacity is 3300 gal per hr at 10' head.

Liquid level control switch is redesigned and is said to have no weights, floats, "displacements", or electrodes to fail. It operates on the principle of water rising to trap air in the skirt of the switch. Compressed air flexes a diaphragm which makes switch contact, turning on pump. As soon as pump starts, its pressure flexes a second diaphragm in switch to hold switch "on" as long as water remains to be pumped. Unit is available with or without liquid level control switch for manual or automatic operation.

(New 109 pump is a product of Kenco, Inc., Dept. CP, 1125 North Ridge Rd., Lorain, Ohio . . . or for more information reader may simply check CP 3650 on handy Reader Service slip between pages two and three.)

Lightweight diesel develops 13 hp with continuous load

Recent announcement has been made of addition of a V-type, 2-cylinder, lightweight diesel to manufacturer's line. This four-stroke cycle model is air

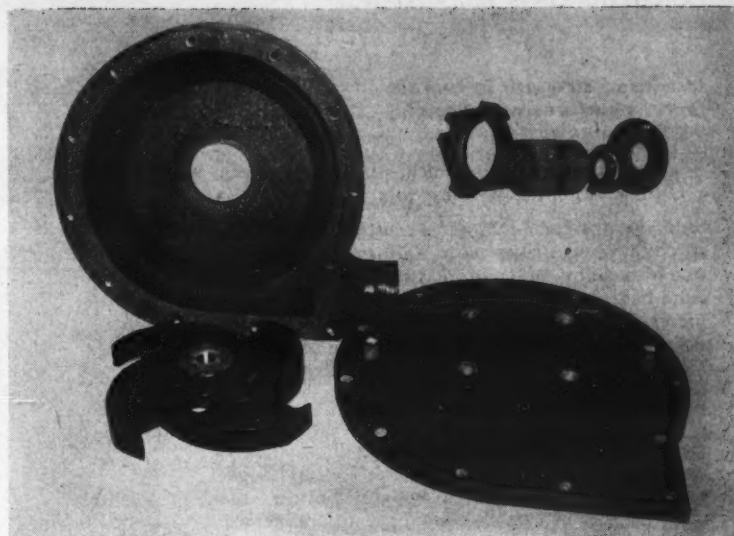


Unit is air cooled with integral flywheel

cooled and has an integral flywheel. It is designed to give 13 hp, continuous load — 14 hp at intermittent speed. It has a 3 1/2" bore and 3 3/4" stroke.

Displacement per cylinder on Model AC-2 is 36.07 cu in. Compression ratio is 20 to 1. Weight of the unit is 25 lb per hp.

(Product of Hallett Mfg. Co., Dept. CP, Redondo & Manchester, Inglewood, Calif. . . . or for more information check CP 3651 on handy form, pages 2 and 3.)



THESE MOLDED HAVEG PARTS ARE USED IN PUMPS FOR HOT (104° F.) 30% HYDROCHLORIC ACID. TYPICAL SERVICE RECORD: 33 MONTHS WITHOUT REPLACING A SINGLE PUMP PART.

WHERE PUMPS MEET HOT CORROSIVES USE HAVEG

In the design of pumps for handling highly corrosive liquids, Haveg engineers have successfully recommended the use of Haveg for many parts in contact with the liquid. Such parts include the casing, suction head, impeller, mechanical seal, seal ring, bushing clamp, shaft sleeve, back-up ring, drip pan . . . and any other part that must be 100% corrosion-resistant.

Haveg is a moldable, thermosetting plastic material made of acid-digested asbestos and special resins. Haveg effectively resists most acids, salts, chlorine, many solvents—even when used continuously in temperatures as high as 265° F. with a good margin of safety. Haveg is physically strong and is extremely resistant to thermal shock. Haveg is smooth-molded and is easily machined with standard tools.

If you manufacture pumps, valves, and related equipment . . . or if you're looking for the most effective corrosion-resistant tanks, towers, heat exchangers, and other process equipment, call in a Haveg sales engineer for technical assistance. Send for 64-page Bulletin F-6; contains complete engineering data on Haveg.



HAVEG CORPORATION*
NEWARK, DELAWARE

Factory: Marshallton, Del.

Wilmington 3-8884

ATLANTA
Exchange 3821

CHICAGO 11
Delaware 7-6088

CINCINNATI 37
Valley 1610

CLEVELAND 20
Washington 1-8700

DETROIT 35
Broadway 3-0880

HARTFORD 5
Hartford 6-4250

HOUSTON 4
Jackson 6840

LOS ANGELES 14
Mutual 1105

SEATTLE 7
Hemlock 1351

ST. LOUIS 17
Hiland 1223

*A subsidiary of Continental-Diamond Fibre Co.
Is the Haveg Bulletin F-6 in your files? Write today!

When inquiring check CP 3652 on handy form, pgs. 2-3

Increased strength in curved metal structures with use of "3-D" flame cutter . . .

semi-automatic equipment makes uniform preparation of welding joints

Semi-automatic "3-D" flame cutting equipment speeds up and makes more uniform the preparation of welding joints, in comparison with previous hand-held flame torch methods of scarfing curved pieces. Among design possibilities said to be made practical by the equipment are the use of curving seams in curved metal which offer greater strength in welding than straight seams.

Manufacturer calls the equipment "three-dimensional" because it operates vertically, horizontally, and at angles from the first two as it scarfs edges of curved metal pieces. Third dimension is the operation of the cutting equipment around curves. In this way it is said to be a departure from previously developed semi-automatic flame cutters which operate vertically and horizontally in two dimensions only as they scarf the edges of flat metal.

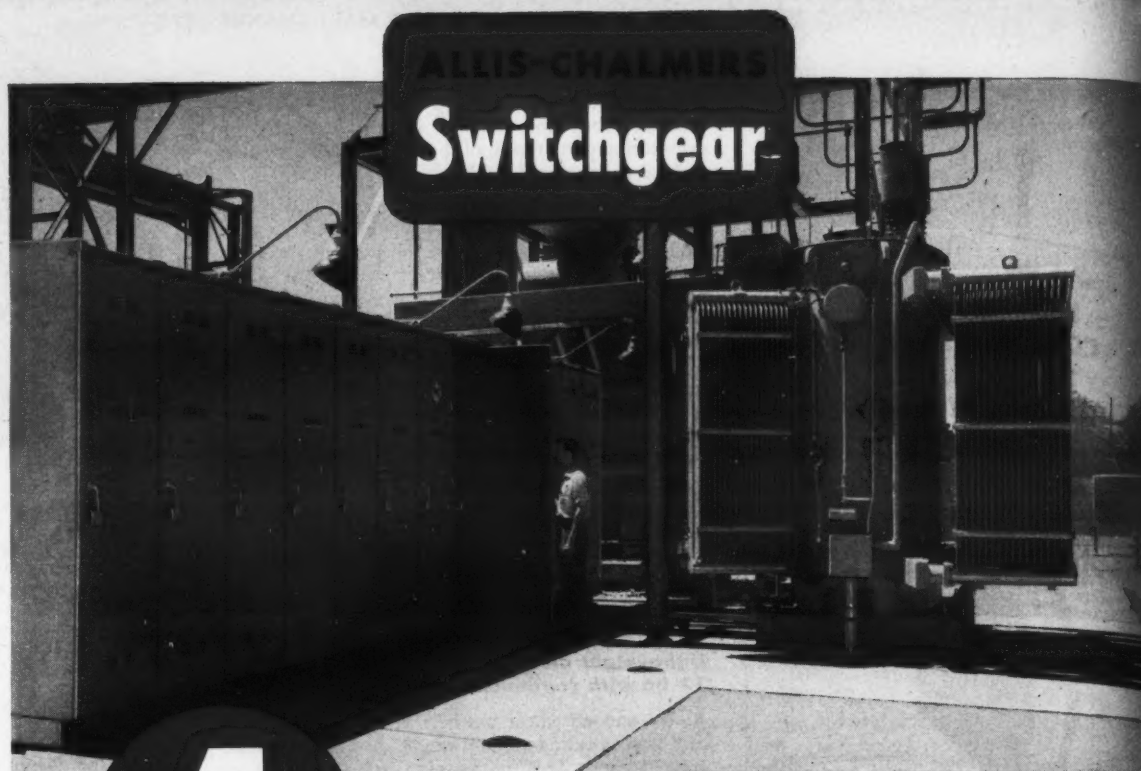
Equipment centers on a flame cutter which moves under power as it follows curves of metal under process. Cutting flame slants at a constant angle from the desired apex of a scarfed edge. A system of twin rails is used whose rise, fall, tilts, and turns match those of the metal being prepared. Four spring-loaded drive rollers and a spring-loaded idler roller keep moving unit true to path of rails.

Drive rollers move at speeds up to 15" per minute, powered by a 1/25th hp electric motor. Speed range can be varied to suit needs. One of the rollers in the drive group is serrated to prevent slippage when unit enters a curve, where control must be absolute if deviations are to be avoided. Serrated roller cuts its own track in guide rail which it follows.

Spring pressure from within moving unit which also carries motor in its sealed aluminum case, keeps four drive rollers pressed snugly against lower or inside rail. This rail is closest to the metal in process and from its center to the apex point a constant distance is maintained. Fifth roller, the idler, presses against the upper or outer rail which serves as a stabilizer. Fifth roller also joins with serrated roller and a drive roller, which lies between serrated and fifth rollers, to keep orifice of cutter head in exact position.

Centers of rollers are lined up with desired position of orifice when equipment is built. Three rollers in effect are moving unit's front wheels, whose "axle" is aimed at the apex point with the help of tilt of rails at curves. All rollers except the serrated roller are concave to fit rounded surfaces of rails, which they grip from sides under spring pressure.

Projecting inward toward metal being scarfed from moving unit is a sector on which flame cutting head itself is mounted. Sector curves over edge being scarfed so that head may be set at any of the angles the job may require. Center of sector is apex point of work. However, move-



4 WAYS to Guard Against Power Interruption

Here are a few of the many different circuit arrangements Allis-Chalmers can provide. All are designed to assure continuity of service. Each one is specially suited for specific situations.

With Allis-Chalmers switchgear, all these circuit schemes have one advantage in common. Each arrangement shown can be built into standard units of Allis-Chalmers metal-clad switchgear without adding extra cubicles. This economy and simplicity, plus the obvious space savings, make Allis-Chalmers equipment especially attractive.

Which Arrangement is Best? A study of your problem is needed to answer this question. Any one of these arrangements may be best for your plant. Or maybe an entirely different scheme is needed. In any case, Allis-Chalmers engineers can help you work out the best scheme for you . . . one that provides ✓ economy, ✓ simplicity, ✓ space saving, and ✓ uninterrupted service.

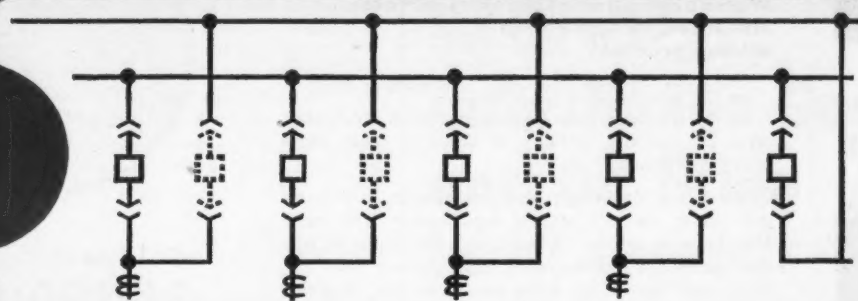
For complete information, call your nearby A-C district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4135

ALLIS-CHALMERS

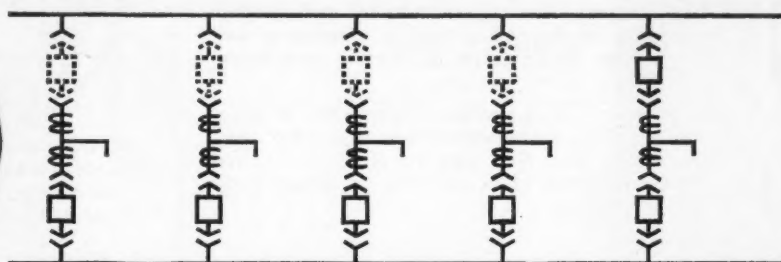


1



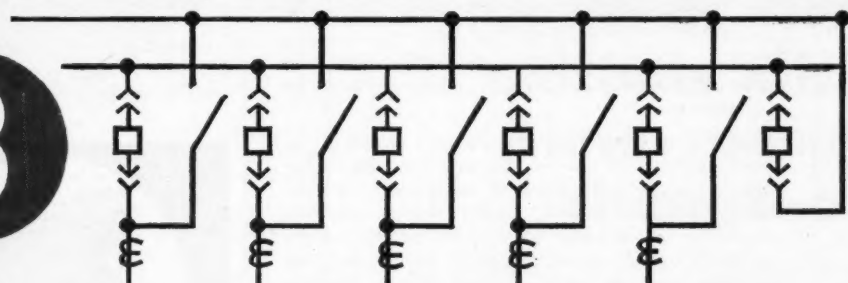
DOUBLE BUS in line

2



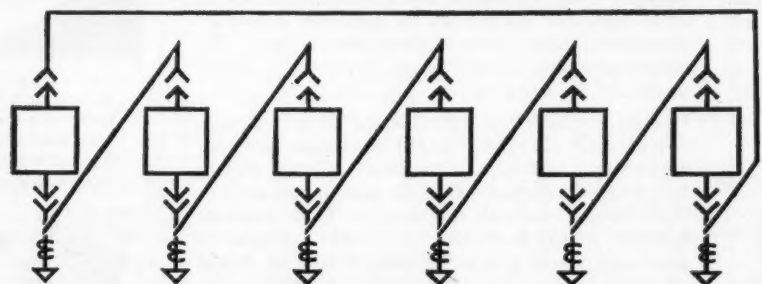
DOUBLE BUS back-to-back

3



TRANSFER BUS and disconnect

4

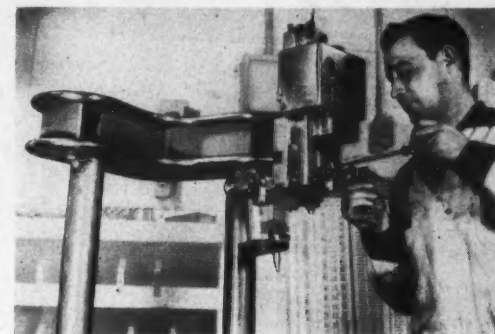


RING BUS

When inquiring check CP 3653 on handy form, pgs. 2-3

ment of head on sector does not destroy constant relationship of apex and center of guide rail. Stops on sector speed up adjustment of angle of head for scarfing first one side of edge, then the other, although arbitrary changes within limits of stops can be made.

Maintenance of constant relationship of apex and rail results in angled edges whose peaks will invariably meet peaks in other edges of curved metal



Unit may be set to cut at most desirable angle. It will cut at speeds up to 15 inches per minute

to which they will be welded. This maintenance of a stable apex point speeds up production and cuts down waste, according to manufacturer. It is also reported that tolerances of $1/32$ nd of an inch can be maintained.

Rails on which unit rides are mounted on fixture which holds metal under process. Rails can be built in a complete circuit, if job so requires, or in any portion of a circuit, guiding unit up, down, and around like a roller coaster. It has been found practical, however, to avoid cutting upward more than 22 degrees if falling slag is to be kept away from head.

Although unit is being made in a standard size by the company and torch cutting equipment obtained from well-known suppliers, each set of rails and accompanying fixture must be built for piece of metal being processed. Company has made a unit big enough to hold a casting measuring 4 x 8', permitting cuts of 16 linear ft along three sides at an angle of 22 degrees of horizontal. Metal can be cut in thicknesses between $1/4$ " and 8" at speeds up to 15" per minute. Speeds vary with thickness of metal to be cut.

Among features which add to simplicity of operation of "3-D" equipment are a quick reversal switch to carry unit back to starting point. Limit switches stop cut at point where no cut is to be made or angle is to be changed. A quick-acting, double shutoff valve for oxygen and acetylene permits relighting without readjustment of preheat flames.

(Product of Milwaukee Shipbuilding Corp., Dept. CP, 3718 W. Lancaster Ave., Milwaukee 9, Wis. . . . or for more information reader may simply check CP 3654 on convenient Reader Service slip between pages two and three.)

PUMP *Non-Lubricating* MATERIALS?

For pumping
NON-LUBRICATING FLUIDS, SEMI-FLUIDS
such as: crude oils, cellulose, distillates, etc.



NEW External Gear & Bearing
Bracket Type
Sier-Bath
SCREW PUMPS

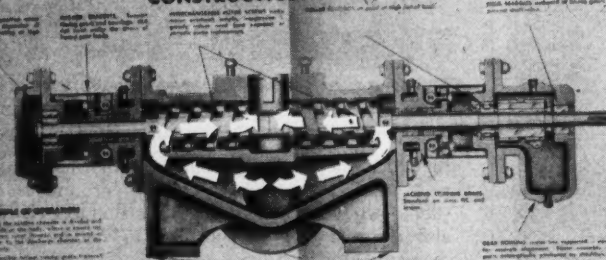
Center Line Support
Single Point Alignment
Radial and Axial Control

Send for this
NEW BULLETIN (SE-5)

illustrating, describing

Sier-Bath
External Gear & Bearing
Bracket Type
SCREW PUMPS

CONSTRUCTION FEATURES



Sier-Bath External Gear and Bearing Bracket Type Screw Pumps

**Fold-out page shows operation...
construction details...special types**

- pump fuel oils, crude oils, cellulose, distillates, etc.
- fluids and semi-fluids, 32 SSU to 1,000,000 SSU
- capacities 1-700 GPM
- discharge 1000 PSI for viscous liquids, 500 PSI for water

Sier-Bath "Gearx" and "Hydrex" Gear Pumps for lower pressures and capacities

Recently introduced, this Sier-Bath Pump incorporates all the latest refinements of screw pump design... and then some. **Center line support** speeds assembly... **single point alignment** eliminates rotor distortion... **radial and axial control** of rotors by heavy-duty bearings for sustained efficiency, long life. For the whole story...

SEND FOR BULLETIN SE-5

Sier-Bath GEAR & PUMP CO., Inc.
9260 Hudson Blvd.
North Bergen, N. J.

Founded 1905

Member A. O. N. A.

Also Manufacturers of Precision Gears and Flexible Gear Couplings

When inquiring check CP 3655 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

**Water absorption on masonry surfaces
minimized by application of
silicone product...**

reduces efflorescence, does not discolor walls

Uses: For treatment of concrete, brick, and other types of masonry surfaces in order to make them water repellent.

Features: According to manufacturer, laboratory tests show product permits significantly less water absorption in cement blocks than other types of silicone products. These tests also showed that the compound minimizes efflorescence on the surfaces and does not cause any discoloration.

Description: Compound can be applied in all seasons, one coat being sufficient in most cases. Before application, surface should be dry and free of loose particles. Coverage is 75 to 150 sq ft per gal, depending on the type of surface. Product is said to penetrate deeply and to be effective immediately after drying.

(Hydrocide S-X is product of Dept. P-6, Building Products Div., L. Sonneborn Sons, Inc., Dept. CP, 404 Fourth Ave., New York 16, N. Y. . . or for more information check CP 3656 on handy form, pages 2 and 3.)

**Smooth operation offered by
electronic drive for jobs of
lower hp requirements...**

provides stepless adjustable speeds from AC circuits in range of $\frac{3}{4}$ to 3 hp

Uses: For a number of production jobs and processing operations having relatively low hp requirements.

Features: Operating from a plant's incoming AC power supply, features of this unit are said to be: direct application of power to equipment; conveniently centralized control; smooth stepless starting; controlled acceleration; wide speed range; stepless adjustable speeds; unlimited speed changes; jogging, inching, creeping; speed setting before starting; quick, smooth stopping, and fast, smooth reversing.

Description: Electronic, adjustable-speed drive is available in five sizes — $\frac{3}{4}$, 1, $1\frac{1}{2}$, 2, and 3 hp ratings. Unit operates at speeds of from 270 to 2300 rpm, and as low as 75 rpm, for setting-up operations, light loads, or intermittent duty. Its components are a drive motor, operator's control station, and control unit.

Operator's control station, housed in a compact, conventional (NEMA No. 1) enclosure, provides "Start-Stop" buttons, a "Jog-Run" selector switch, and a speed adjuster. Control unit, mounted in a steel cabinet, requires no attention from machine operator; it may be located on a wall or column in plant area where it is to be used, in base of driven machine, or in a remote location. All three components may be closely associated or widely separated as optimum efficiency may dictate.

Drive motor is available with all types of enclosures and mountings. In addition, optional equipment



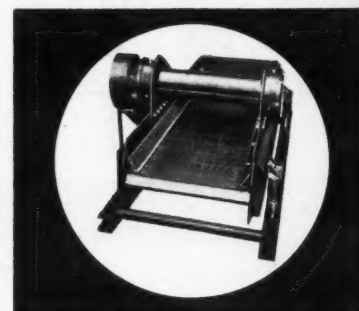
these
**ROUND ROD
SCREENS**
make you money

DOLLARS are made for you every day by the more efficient operation of Bee-Zee Screens.

DOLLARS result from more accurate screening—because screen openings remain the same throughout the Bee-Zee screen's life-span.

DOLLARS result from cleaner screens—There are no pockets where deposits can collect...no clogging or blinding even with high moisture materials.

DOLLARS result from longer life...less "down" time—Users report up to 30 times longer life. All-welded construction of special alloy steel withstands rust, shock and abrasion... "round" design takes more punishment.



Tell us your requirements. Bee-Zee Round Rod Screens can be made with any size rod for any size opening... "tailor-made" to fit your equipment. Ask for free descriptive catalog.



BIXBY-ZIMMER
Engineering Co.

793 Abingdon St., Galesburg, Illinois
**BEE-ZEE SCREENS CAN BE FITTED
TO ANY SCREENING EQUIPMENT**
When inquiring check CP 3657
on handy form, pages 2 - 3.

CHEMICAL PROCESSING

includes three types of control stations: 1) foot-pedal operated, for starting, stopping, and speed control; 2) explosion-proof, for use in hazardous atmospheres; and 3) reversing drum-switch, which provides forward and reverse functions with speed control. Other optional units available with the drive are gearmotors in single, double and triple reductions for lower than standard operating ranges, and factory-mounted speed indicators.



Components of unit may be closely associated or widely separated

Processing units to which variable-speed drive may be applied include chain, belt, apron, and screw-feed conveyors; rotating filters; centrifuges; mixers; variable-flow pumps; plastic-pipe extruder pull-out stands; and numerous other types of equipment.

(V*S, Jr. variable-speed drive is a product of Reliance Electric & Engineering Co., Dept. CP, 1088 Ivanhoe Rd., Cleveland 8, Ohio . . . or for more information check CP 3658 on handy form, pages 2 and 3.)

Temperatures of 356°F resisted by insulating varnish

Uses: As a heat-resistant insulating varnish.

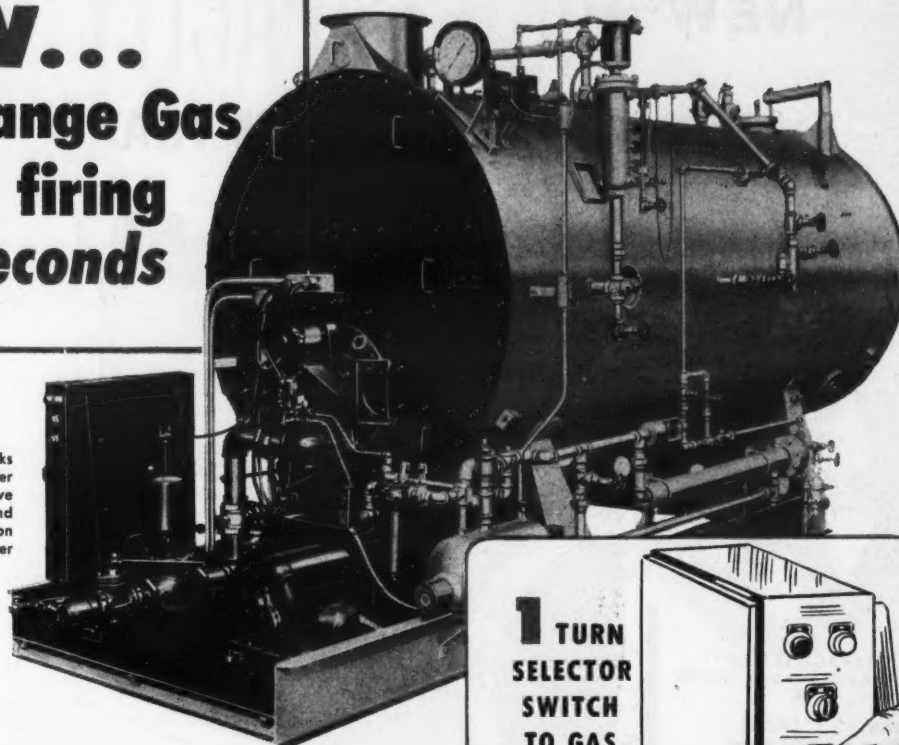
Features: Tests are said to indicate no adverse effects on numerous electrical applications when operated at elevated temperatures as high as 356°F.

Description: Varnish has a clear color, excellent oil and moisture resistance, with a dry dielectric strength of 2100 v per mil, according to manufacturer.

(For further information contact Sales Promotion Dept., Irvington Varnish and Insulator Co., Dept. CP, 6 Argyle Terrace, Irvington 11, N. J. . . . or check CP 3659 on handy Reader Service slip, pages two and three.)

NOW... interchange Gas and Oil firing in 10 seconds

Modern Cleaver-Brooks Model LR Steam Boiler Equipped with Exclusive Cleaver-Brooks "10-second conversion" Combination GAS and/or OIL Burner



TWO, simple motions eliminate time-consuming change-over

Now you can use oil or gas at the flick of a switch! This exclusive new Cleaver-Brooks development permits changeover from oil to gas or vice versa in only 10 seconds.

That's because the Cleaver-Brooks Combination Gas and/or Oil Fired Boiler operates on gas *with the oil burner in place*. Simply flipping a selector switch on the control panel to either gas or oil sets the proper circuit in action. Turning the convenient fuel supply valves completes the entire changeover — and in 10 seconds or less!

To gas users in all parts of the country — and in particular areas where local requirements demand immediate changeover — this exceptional fuel flexibility can be an important factor in determining your overall operating economy.

Ten-second conversion, like 4-pass construction, self-contained design, guaranteed 80% efficiency, is another "plus" feature pioneered by Cleaver-Brooks. It demonstrates Cleaver-Brooks' continuing effort to bring steam users even greater flexibility and reduced operating costs.

Consider Cleaver-Brooks boilers for simplifying your operation. Automatic firing on oil, gas or combination oil/gas fuels, plus extra conveniences, assure greatest investment return. Write for catalog.

BOILERS — STEAM OR HOT WATER — FOR HEATING AND PROCESSING, IN SIZES FROM 15 TO 500 HP, 15 TO 230 PSI

When inquiring check CP 3660 on handy form, pgs. 2-3

1 TURN SELECTOR SWITCH TO GAS OR OIL

2 TURN OFF ONE FUEL LINE AND OPEN THE OTHER



Cleaver-Brooks

Originators of the Self-Contained Boiler

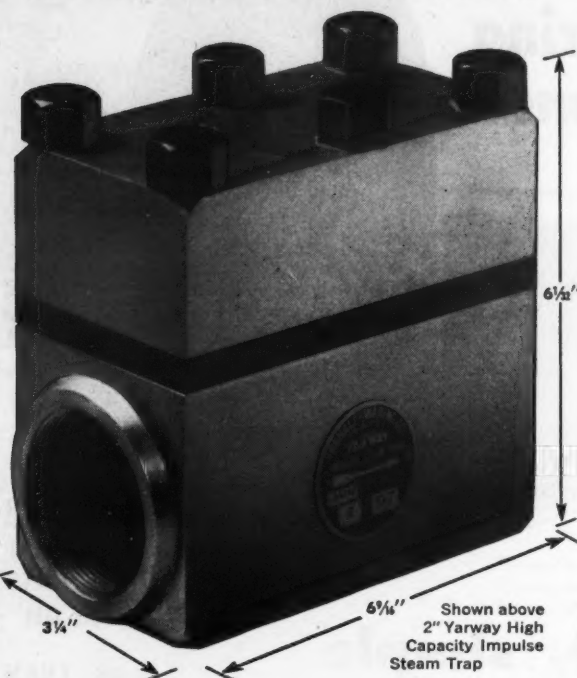


CLEAVER-BROOKS COMPANY

Dept. K, 349 E. Keefe Ave., Milwaukee 12, Wis., U.S.A.
Cable Address: Clebro-Milwaukee

Builders of Equipment for the Generation and Utilization of Heat • Steam Boilers • Oil and Bitumen Tank-Car Heaters • Distillation Equipment • Oil and Gas-Fired Conversion Burners

NEW HIGH CAPACITY IMPULSE STEAM TRAP



CAPACITIES OF
YARWAY SERIES 50 TRAPS

Pressure PSIG	CAPACITY* pounds per hour		
	1 1/2"	2"	2 1/2"
1	3000	4670	9500
2	4500	7000	15000
3	6000	9350	19500
4	7000	10900	22400
5	7500	11700	24400
6	8000	12500	26000
7	8300	12900	27300
8	8600	13400	28400
9	8800	13700	29400
10	9000	14000	30250
15	9650	15050	32800
20	10300	16100	35000
40	12530	19600	43500
60	14400	22500	49600
80	16000	25000	55000
100	17300	27000	60000
125	18700	29200	65700
150	19900	31100	70300
200	21900	34200	77400
250**	23500	36200	81500
300**	24700	37400	84000

*Capacities are based on condensate 30° F. below steam temperature.

**When total equivalent length of piping connected to trap is greater than 20 feet, it is recommended that the capacity values indicated for 200 # pressure be used in figuring requirements for all pressures above 200 psi.

NEED to handle condensate in unusually large quantities?

Then here is your steam trap—the Yarway Series 50 Impulse—"big brother" to the well-known Series 60 and 120 Yarway Impulse Steam Traps of which over 900,000 have been sold. Uses the same basic operating principle.

The new Series 50 (made in three sizes, 1 1/2", 2" and 2 1/2"), has proved highly successful for condensate drainage on heat exchangers and stage heaters in power plants; reboilers, reheaters, stills, evaporators, debutanizers, etc., in refineries and chemical plants; large dryers in paper mills and textile plants, etc.

In many cases, Yarway Series 50 Traps have replaced traps several times their size.

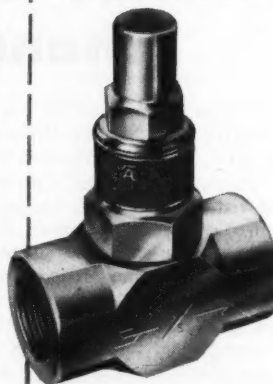
For full information, write for Yarway Bulletin T-1745.

YARNALL-WARING COMPANY
125 Mermaid Avenue, Philadelphia 18, Pa.

YARWAY
IMPULSE
STEAM TRAP

When inquiring check CP 3661 on handy form, pgs. 2-3

OVER 900,000
STANDARD
YARWAY
IMPULSE
STEAM TRAPS
ALREADY SOLD



Series 60 and 120 Yarway Impulse Steam Traps in six sizes from 1/2" to 2" are used for all normal requirements. Stocked and sold by 250 local distributors. See Bulletin T-1740.

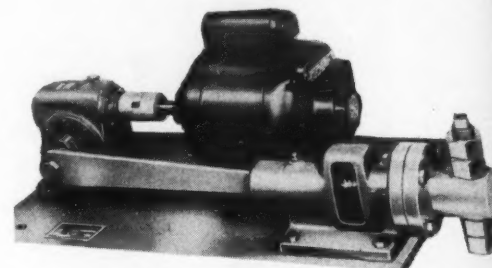
CONSTRUCTION & MAINTENANCE

High pressures & many materials handled by proportioning pumps

Uses: In the chemical, textile, petroleum, and paper industries, and in water treatment in boiler plants, water works, and sewage plants.

Features: Standard models meter precise quantities of viscous materials, slurries, suspended solids, and corrosive liquids in a range of from 0 to 100 gph at pressures to 1200 psi. Special units can be obtained with capacities to 300 gph at pressures to 20,000 psi.

Description: Pumps are designed so that packing can be changed without breaking pipe connections. When required, timers, agitators, and liquid level



Valve design assures greatest degree of accuracy

controls can be obtained with these precision proportioning units. Automatic controlling devices are available that adjust capacity while pump is operating, and all models can be made with special metals, oversized valves, water seals, and motors to meet particular operating conditions. Dual suction and discharge spring-loaded valves with valve check balls that seat positively, assure greatest degree of accuracy, according to manufacturer.

(Product of Walter H. Eagan Co., Inc., Dept. CP, 2336 Fairmount Ave., Philadelphia 30, Pa. . . . or to secure more information reader may simply check CP 3662 on Reader Service slip between pages two and three.)

Savings and simplicity featured with use of packaged industrial fuel burning system

Uses: For industrial fuel burning applications and especially for conversion of large boilers to oil or gas firing.

Features: Packaged system, built around burner for oil or gas firing, includes proper controls mounted in panels and wired to terminal strips for easy connection, factory engineered windbox assembly and refractory ring to guarantee quick installation, fuel oil heaters, and trim. Simplicity of design is said to reduce initial installation costs and subsequent maintenance.

Description: Elements of system include the following: burners, oil or oil/gas fired, in a complete range of sizes from 18 to 400 hp; windbox

PUMPS for the PROCESSING INDUSTRY

...that SERVE
WELL and
LAST!

**CORROSION
EROSION
or other
PHYSIO-
CHEMICAL
PROBLEMS**

Fig.
19,488

To Chemical Engineers who cope with such problems: Taber builds pumps of metals or alloys which the Engineer has found effectively resistant to the specific chemical solution to be pumped. Stability of Taber design never gives way to design for selling purposes. You can get repair parts or duplicate Taber pumps for years.

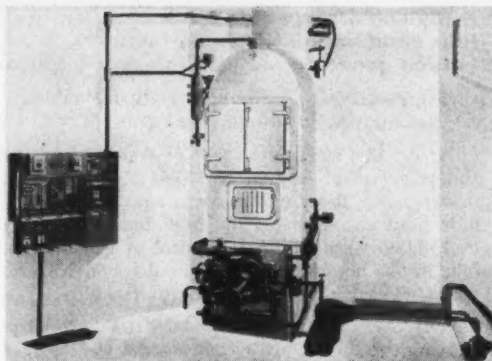
SUGGESTION:
On your business
stationery,
WRITE FOR:

BULLETIN V-837

TABER PUMP CO. Est. 1859
320 ELM ST., BUFFALO 3, N.Y.

When inquiring check CP 3663
on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE



Simple design reduces installation and operating costs

assembly; combustion refractory ring; control panels; tank heaters; oil pump sets; fuel oil heater assemblies of either below-the-water-line or steam type; and trim assembly of valves and gages for suction and discharge piping at burner.

(Product of York-Shipley, Inc., Dept. CP, Jessop Pl., York, Pa. . . check CP 3664, pages 2 and 3.)

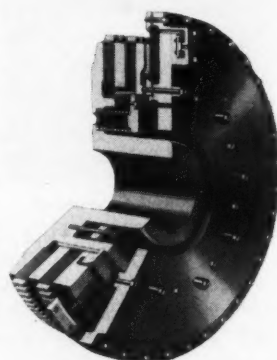
Compact air-actuated clutch designed to handle higher torque capacity loads

Uses: Built to maintain maximum power transmission efficiency even under adverse operating conditions where remote control is desired, and complicated linkage cannot be tolerated.

Features: Even with added torque capacity, air-actuated design is lighter in weight and narrow. Compactness allows clutch to be installed in less shaft space, with closer shaft-bearing center distances. All parts are fabricated from specially developed alloys, for maximum strength to withstand heavy shock loads and tooth wear. Capacity of clutch is given on a basis of working torque rather than actual break-away torque.

Description: Clutch has a single set of air-cooled springs which assure quick, positive plate release and equal distribution of release pressure. Air actuation is effected through insulated and air-cooled diaphragms — and is said to be unusually smooth and accurate. Clutch is offered in 2- and 3-plate 24 inch size.

(Model PO Air-Actuated Clutch is a product of Twin Disc Clutch Co., Dept. CP, 1361 Racine St., Racine, Wis. . . check CP 3665, pages 2 and 3.)



Lighter in weight and
narrower in clutch width

"Beaumont"

Heat Treated Alloy Steel average yield
point 150,000 psi; elongation 6%.



"DURA-TREAD"

Chains with added wear-
ing surface on barrel.

"TRAC-PULL"

wheels, no teeth to wear out



3 points

**that assure up to 2500% longer
life with BEAUMONT CHAINS**

A combination of wear resistant metal and unique patented design keeps Beaumont bucket elevators operating when other conventional types wear out under highly abrasive conditions.

One large manufacturer installed Beaumont equipment in place of malleable iron and saved over 95% in the handling of Pyrites.

Three basic reasons make this possible. 1. Beaumont "Beaumont" alloy steel is particularly resistant to abrasive action. 2. Beaumont "Dura-Tread" chain barrels provide additional wearing surface at the point where wear is greatest. 3. Beaumont "Trac-Pull" wheels are a new departure in sprocket design that eliminates the abrasive action inherent in conventional tooth-sprocket types. These advantages mean less maintenance, less outage time, less cost per ton handling and less worry about breakdown. Beaumont "Dura-Tread" chain is also available in corrosive resistant metal and malleable iron where the application is not abrasive. They are stronger, lighter, last longer and with "Trac-Pull" wheels are substitutes for standard chains.

If your problem is moving chemicals, fertilizers, coal or any other abrasive and corrosive solids, Beaumont material handling equipment will save you money.

Why not investigate the possible savings . . . Write today for Bulletin 4140.1 on Beaumont Bucket Elevator Equipment.



Beaumont **BIRCH COMPANY**
1516 RACE STREET, PHILADELPHIA 2, PA.

DESIGNERS—MANUFACTURERS—ERECTORS BULK MATERIAL HANDLING SYSTEMS

When inquiring check CP 3666 on handy form, pgs. 2-3

The OLIVITE Acid-Handling Pump is really 2 pumps in one!



Yes, many chemical plant operators have come to regard the Olivite Pump as two pumps in one... one, an efficient centrifugal pump for handling liquids; the other, a durable pump with high resistance to corroding solutions.

In one large chemical plant with extensive acid-pumping operations, more than 100 Olivite Acid-Handling Pumps are now in service. They are handling several different solutions, both hot and cold, with widely varying pH values.

Thousands of these corrosion resistant and leak-resistant pumps have been supplied to industry through the years. Chances are the Olivite could fit very nicely into your pumping operations. Write for our Bulletin 308-R, which gives complete information. When you do, please give full details of your pumping problems.

It is possible you may also be interested in the ODS Diaphragm Type Pump which gives excellent results in pumping solutions as well as slurries. Bulletin 309-R gives full details.

WORLD WIDE SALES, SERVICE AND MANUFACTURING FACILITIES

OLIVER UNITED FILTERS

NEW YORK 36 — 33 West 42nd Street • CHICAGO 1 — 221 North LaSalle Street
OAKLAND 1 — 2900 Glascock Street • SAN FRANCISCO 11 — 260 California Street
Export Sales Office — New York • Cable — OLUNIFILT



FACTORIES:
Hastelton, Pa.
Oakland, Calif.

When inquiring check CP 3667 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

**X-ray unit fits into auto trunk
tube head contains high
tension generator . . .**

single housing eliminates need for cables — lessens weight of unit

Uses: For rapid inspection of welds, pipe lines, and power plant equipment.

Features: X-ray unit fits into auto trunk. X-ray tube head also contains the high tension generator of 150,000 v output. Arrangement of generator and tube in one housing eliminates need for high tension cables, always a possible source of trouble.

Description: Tube head weighs 143 lb. Accompanying control is equally compact and weighs 80 lb. Tube is fan-cooled and has an end port which provides maximum usefulness in handling various types



Entire X-ray unit weighs only 223 lb

of "close-in" work. Combination tube and generator unit has diameter of 10-5/8" and is 35" long. Where desired, diameter can be reduced to 8 1/2" by eliminating removable guards. Power supply for instrument can be either 115 or 230 v AC. Current drain is twenty amperes.

(Product of X-ray Dept., Non-destructive Testing Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. . . . or for more information check CP 3668 on handy form, pages 2 and 3.)

**Flush-mounted bulletin boards
may be grouped to suit any
space requirement**

Bulletin boards have green, self-sealing surfaces and flush frames of anodized aluminum. They may be hung vertically or horizontally, with screws or buttons and wire, singly or in any combination of multiple units, to occupy as much wall space as needed to provide laboratory or plant with display of notices, charts, and memoranda.



Koncentrik

TUBE FITTINGS

(in Stainless
or Monel)



- are better*
FIVE WAYS
1. DOUBLE SEALED . . . metal-to-metal seal plus Teflon insures vacuum tight connection.
 2. EASY TO USE . . . and reuse . . . install fast.
 3. FATIGUE PROOF design and operation.
 4. PRESSURE SAFE construction exceeds tube strength.
 5. LOW INITIAL COST . . . interchangeable parts.

Over 1200 combinations for tubing through 1" O. D. . . . ready for prompt shipment through leading Stainless distributors.

**THE SPECIAL SCREW
PRODUCTS CO.**

5445 Dunham Rd., Bedford, Ohio

Send for Proof

Literature covering Koncentrik fittings, and Powell valves with machined-in Koncentrik connections, now available. Write today.



When inquiring check CP 3669 on handy form, pgs. 2-3

CHEMICAL PROCESSING

"Kick" TAKING THE OUT OF HOT CAUSTICS WITH FEON Dynel FILTER FABRICS



Switching to FEON Dynel cut filter cloth costs over 50% on this filter press at the Exton, Pa. plant of Foote Mineral Company.

Hot caustic solutions, used in the production of lithium chemicals, had made short work of cotton fabrics. These liquids have practically no effect on Dynel.

One of the four FEON synthetics . . . Nylon, Orlon, Dynel, or Vinyon-N . . . can save on any tough filtration or dust collecting job that can be handled by fabrics . . . including yours. Want proof? Just write us today.



FILTRATION FABRICS DIVISION
FILTRATION ENGINEERS, INC.
155 Oraton St., Newark 4, N. J.

When inquiring check CP 3670 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Two sizes are available: 18 x 24" and 24 x 36". Boards are packed in individual cartons with six or twelve to a master carton.

(Bulletin boards are products of Modern Display Co., and are distributed by Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. . . or for more information check CP 3671 on handy form, pages 2 and 3.)

Saves space, provides accurate and efficient support for hi-temp piping systems

Uses: As a pipe hanger in steam generating plants, refineries, and chemical plants.

Features: Counterpoise hanger is designed so that all principal load-carrying parts are concentrated at one end. This permits great flexibility of installation and saves valuable space in congested areas. Overhanging spring assembly can also be revolved at any angle about the load and support rods, which gives additional flexibility in locating the hangers.

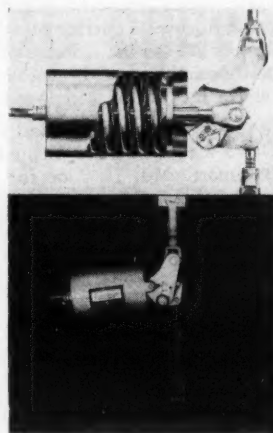
Description: Pipe hanger is a spring-actuated counterbalance which, through an ingenious system of linkage, transforms varying force of spring in an accurate mathematical ratio to produce a load supporting effort of constant value throughout the entire range of travel as the pipe expands or contracts due to temperature changes.

Friction in unit is minimized by roller-type main bearings mounted on hardened and ground pins with sealed-in lubrication. Bearing housings are precision machined and all parts are assembled on rigid alignment fixtures.

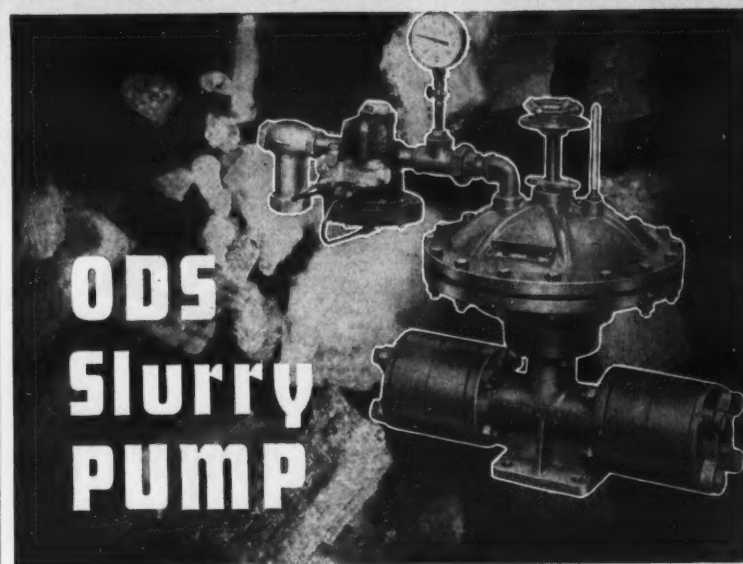
Helical compression springs are designed with a low slenderness ratio to prevent buckling. Special steel is hot-wound to form springs which are hardened and heat treated. Ends are tapered, squared, and ground. Springs are pre-set and pre-tested before assembly and in operation are conservatively stressed.

Pipe hanger is available in 16 different frame sizes with load capacity ranging from 200 to 16,000 lb and expansion travels up to 12".

(Product of National Valve & Mfg. Co., Dept. CP, 3127 Liberty Ave., Pittsburgh 1, Pa. . . or for more information reader may simply check CP 3672 on convenient Reader Service slip between pages two and three.)



Assembly can be revolved at any angle about load and support rods



... protects friable crystals against degradation

AND here's some proof that the ODS does protect against crystal spoilage . . . proof of the relatively gentle handling of crystalline products by the ODS Diaphragm Slurry Pump which in this case is grainer salt.

Screen Mesh	Salt at Grainer Discharge	Salt After ODS Pump*	Salt After Centrifugal Pump*
10	10.2%	11.4%	1.6%
14	17.8%	18.3%	7.3%
20	15.6%	17.7%	9.8%
28	22.0%	24.6%	11.5%
35	14.9%	14.6%	20.6%
48	10.0%	7.6%	18.6%
65	5.4%	3.1%	11.2%
100	2.2%	1.0%	6.0%
-100	1.9%	1.7%	3.4%

*Note that both pumps had a 160 foot carry and a 45 foot lift. Note also, that in certain sizes, there was actually a measurable increase in crystal size resulting from the ODS brine cooling effect.

If degradation of crystalline size and structure is important when the slurry in your process is handled, you certainly should check on the merits of the ODS Pump. Even if crystal degradation is not an important factor, other advantages will appeal to you . . . advantages such as low maintenance, no mechanical linkage to the diaphragm, no weakening holes in the diaphragm, no clogging of the valves. Write or call our nearest sales office.



308-R & 309-R

Bulletin 309-R gives full details of the ODS Pump. Shall we send you a copy?

If you are handling clear chemical solutions of any type, hot or cold, our Olivite Acid Handling Pump will probably serve you best. Shall we send you a copy of Bulletin 308-R?

WORLD WIDE SALES, SERVICE AND MANUFACTURING FACILITIES

OLIVER UNITED FILTERS

NEW YORK 36-33 West 42nd Street • CHICAGO 1-221 North LaSalle Street
OAKLAND 1-2900 Glascock Street • SAN FRANCISCO 11-240 California Street
Export Sales Office - New York • Cable - OLUNIFILT



FACTORIES:
Houston, Pa.
Oakland, Calif.

When inquiring check CP 3673 on handy form, pgs. 2-3

Sharples has...

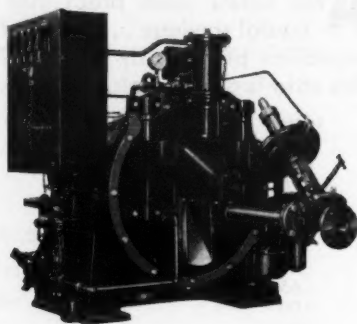
TWO RIGHT ANSWERS

for crystal dehydration

The proved answer to any crystal dehydration problem is found in one of these two Sharples centrifuges. An analysis of your particular requirements will lead to an unbiased recommendation as to the type of centrifuge most suitable—Sharples makes both.

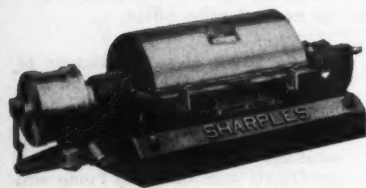
IF YOU RINSE THE CRYSTALS

The Sharples Super-D-Hydrator is designed primarily for free draining crystals, where product purity or separation of the mother and rinse liquors are of critical importance. The continuous cyclic-operation may be easily controlled to adjust for any particular washing and drying conditions. Capacities on the larger C-27 model range up to 8 Tons per hour on some materials. Bulletin 1257 describes the Super-D-Hydrator.



IF YOU DO NOT RINSE THE CRYSTALS

The Sharples Super-D-Canter is used for dehydrating fine or amorphous-type materials. Where washing efficiency and final moisture content are not critical, the Super-D-Canter has decided economic advantages in capacities up to 3,000 lbs. per hour. The rate of liquid handling is substantially independent of the crystal concentration, and the Super-D-Canter operates continuously and efficiently without regard to changes in slurry concentration. Write for Bulletin 1254.



SHARPLES

THE SHARPLES CORPORATION • 2300 WESTMORELAND ST. • PHILA. 40, PENNA.
NEW YORK • PITTSBURGH • CLEVELAND • DETROIT • CHICAGO • NEW ORLEANS • SEATTLE • LOS ANGELES • SAN FRANCISCO • HOUSTON
Associated Companies and Representatives throughout the World

When inquiring check CP 3674 on handy form, pgs. 2-3

CONSTRUCTION

Water and frost repelled by surfacing compound

Uses: Black liquid bonding agent is for repairing, resurfacing, and patching driveways, parking areas, and loading docks.

Features: Material will harden to a plastic top surface that is water and frost repellent, and that will last for years, according to manufacturer.

Description: For best performance, material should be mixed with crushed stone about $\frac{1}{2}$ " in size or smaller. A coating of the mixture is then applied to any concrete or asphalt surface as a layer $\frac{1}{2}$ " to $2\frac{1}{2}$ " thick. Larger stones are recommended for filling deep ruts or holes. These should then be topped with a layer of the mixture $\frac{1}{2}$ " thick.

As compound is a liquid, it mixes very easily either by turning with a shovel or in a small tumble-type concrete mixer. Used in a ratio of one gal of liquid to 300 lb of stone, when properly mixed, one gal is to cover a surface of approximately 25 sq ft. Stones should be thoroughly coated, avoiding excessive use of the compound.

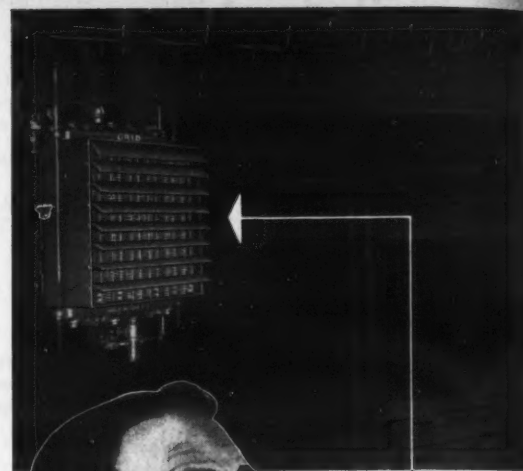
(Product of Dasco Chemical Corp., Dept. CP, 1602-04 Thames St., Baltimore, Md. . . . or for more information check CP 3675 on handy form, pages 2 and 3.)

Space saved by rotary storage stand

Six-page, 2-color folder gives complete information on a space-saving rotary stand for storage of small service and maintenance parts.

Folder is filled with photographs showing units in use in service bench work, and also showing how these rotary stands multiply the number of different parts that can be stored for immediate access in a given space. In addition, folder gives complete catalog data on range of standard stands, capacities, dimensions, components, and special combinations.

Folder MH-810 is issued by The Union Metal Mfg. Co., Dept. CP, Canton 5, Ohio. When inquiring specify CP 3676 on handy Reader Service slip between pages two and three.



Put up to
Stay up!

trouble free service for
over 22 years...that's
only one record for...

GRID UNIT HEATERS

The experience of a large eastern chemical plant is similar to others. In telling of the service of GRID Unit Heaters, this plant says, "We found that cast iron construction stands up very well against the corrosive fumes of HCl, Cl₂, etc. . . . the unit heaters that have copper tubes give trouble due to corrosion in a few years . . . we consider GRID Unit Heaters satisfactory and would certainly recommend them for installation where corrosive acid fumes exist".

Such service records occur because GRID is completely different from other unit heaters — here's how:

- GRID** is an all cast unit with finned heating sections and headers tested to withstand steam pressures up to 250 # P.S.I.
- GRID** construction uses no brazed, soldered, rolled or welded connections between condenser and headers. A specially designed threaded nipple assures a precision, leak-proof fit.
- GRID** construction has all similar metals in contact with steam, thus preventing electrolytic corrosion which eventually occurs in copper type unit heaters where steam passes from iron pipes into copper cores. (Write for booklet CORROSION IN UNIT HEATERS.)
- GRID** construction resists corrosion from fumes present in most types of industry.
- GRID** design incorporating low outlet temperatures, proper fan sizes and motor speeds, assures delivery of warm comfortable air in ample volume to the working level. No stratification of warm air at the ceiling to waste your fuel dollars.

These are the reasons why users of GRID Unit Heaters get 22 years and more of trouble-free service. There are units cheaper than GRID, but there is none better. You start saving money the day you install GRID Unit Heaters. GET THE COMPLETE GRID STORY — WRITE FOR CATALOG CUH-846-A. GRID Blast Coils are ideal for process drying — write for Catalog BC-1049.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

D. J. MURRAY MANUFACTURING CO.
MANUFACTURERS SINCE 1883 WAUSAU • WIS.

When inquiring check CP 3677 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Mechanical strength, tear resistance, outstanding in roll sheeting for window flashing and other uses

Uses: For window flashing, spandrel beam waterproofing, perimeter and parapet flashing, through-wall flashing, water stops, and wrapping for pipes and ducts.

Features: Material has high mechanical strength, it being almost impossible to tear the sheet. Product also has high bursting strength and flexibility at below zero temperatures. It is completely waterproof and impermeable to moisture. Flashing is not subject to corrosion, or to the action of acids or alkalis.

Description: Product is not affected by temperatures as high as 200°F. It will soften somewhat when the temperature ranges from 250 to 300°F, but will not be damaged, and upon cooling, will regain its original properties.

Sheeting can be defined as a non-reinforced, homogeneous product, composed of elastomeric materials, which have been reduced to a thermoplastic state, and extruded under heavy pressure to provide a continuous homogeneous solid. Sheeting weighs 22 oz per sq yard. Material can be applied dry by simply spot bonding to the structure. It does not require mastic underneath or over the sheet itself.

(Nervastral Seal-Pruf Type H-D is product of Rubber and Plastics Compound Co., Inc., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 3678 on handy form, pages 2 and 3.)

Complete strapping unit attaches to belt — frees both hands

Uses: For industrial use, unit is designed to carry strapping, tools, and seals to difficult or distant points, up ladders, scaffolds, poles, roofs, or towers.

Features: Lightweight—portability and convenient accessibility of all equipment on belt enables construction or maintenance man to work quickly and efficiently without stooping. Designed by a safety engineer, unit holds all equipment securely in place, leaves both hands free, interferes in no way with body movements, and prevents entanglement of strapping.

Description: Beltbinder includes three containers suspended from a belt in convenient positions with an even distribution of weight. One container holds an expendable carton with a 200 ft coil of strapping which is easily dispensed at waist or thigh level. Strapping can be cut to desired length by a cutter held in a leather pocket on belt. A canvas pouch, holding strapping tool and a supply of seals, completes the unit.

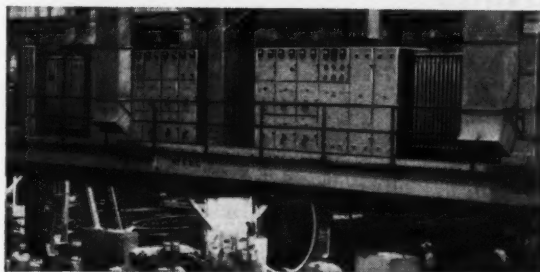
Strapping and corresponding seals are available in $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{8}$, or $\frac{3}{4}$ " widths in a choice of regular steel, galvanized, stainless, copper, copper-clad, Monel, or aluminum.

(Product of A. J. Gerrard and Co., Dept. CP, 1950 Hawthorne Ave., Melrose Park, Ill. . . . check CP 3679 on handy form, pages 2 and 3.)

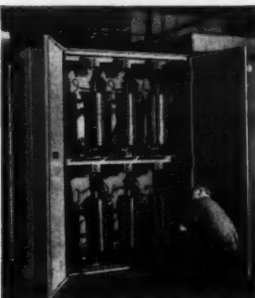


G-E SEALED-TUBE RECTIFIER SUBSTATION needs no protective fence, in no way interferes with duties of plant superintendent nearby.

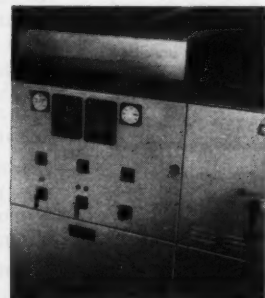
DC conversion equipment—so quiet you can work just one foot away!



PART of a balcony-located substation, this rectifier is supplied with transformer and low voltage switchgear.



RECTIFIER section consists of six ignitron tubes, cooling and magnetic excitation systems.



HOUSING (top) contains dynamic load-absorbing resistor to dissipate brake energy.

G-E power rectifiers: no ventilation problem, no oil, no grime—and you pay less for power

When your variable speed or other d-c power needs reach 75 kw, you would do well to consider a G-E rectifier substation. It's considerably less expensive to operate and maintain than other types of conversion equipment, and it can release valuable floor space by mounting on a balcony or other out-of-the-way spot.

G-E sealed Ignitron Rectifiers are part of a complete metal-enclosed substation. Economically and easily installed, these rectifiers supply d-c power in ratings of 250 v and 600 v from 75 kw to 1000 kw. And because of the simplicity of the rectifier design—no major moving parts—downtime and maintenance costs are materially reduced.

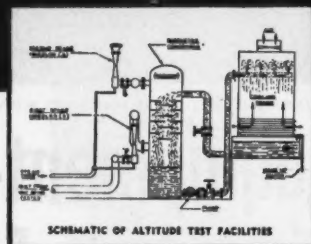
The advantages of G-E sealed Ignitron Rectifiers have gained them wide and rapid acceptance among industrial users . . . and have been translated into story after story of savings, dependability and safety. See how you, too, can add these benefits to your plant by calling or writing your nearest G-E sales office for full information. General Electric Co., Schenectady 5, N. Y.

883-2

You can put your confidence in—

GENERAL  ELECTRIC

When inquiring check CP 3680 on handy form, pgs. 2-3



Evactors duplicate high altitude in jet plane accessories tests

At Strates Division of Fairchild Engine & Airplane Corp., Croll-Reynolds Evactors and barometric condensers are used to simulate high altitude conditions in the testing of jet-plane engines and accessories. The exceptional performance demanded of the complex jet-plane and its accessory equipment, necessitates accurate and exhaustive tests. These Evactor systems create vacuums as high as 1 inch Hg absolute, duplicating pressures at 75,000 feet altitude.

The same careful work and precision which produced these units for Stratos

goes into every Croll-Reynolds Evactor from the 1-stage yielding a pressure of 4 or 5 inches of mercury absolute, to the 5-stage unit designed for work in the range of a few microns.

Many thousands of Croll-Reynolds Evaporators are in operation, some of them for over 30 years. They are in the great majority of the large chemical plants, petroleum refineries, food processing plants, etc. They are installed in every state of the United States and in many foreign countries. Let our technical staff help you with your vacuum problems, including vacuum cooling.

CROLL-REYNOLDS CO., INC.

Main Office: 751 Central Avenue, Westfield, New Jersey
17 John Street, New York 38, N. Y.

CHILL-FACTORS • STEAM JET EVACTORS • CONDENSING EQUIPMENT



When inquiring check CP 3681 on handy form, pgs. 2-3

CONSTRUCTION

Aluminum housing cuts weight of power drive

By replacing the cast steel-iron metal housing and chuck with aluminum, manufacturer has cut the total weight of his Model-D all-purpose power drive to about 100 pounds.

Other design changes include more convenient location of switch; lever safety-lock on switch; and bronze spindle bearings.

Unit can be used easily on bench, truck, or with pipe legs right on job location. One man is said to be able to lift and carry the unit because of its light weight. Large side openings serve for motor ventilation and hand grips for moving. Tools are stored conveniently on flat top.

Model-D has a heavy duty $\frac{1}{8}$ to 2" chuck; enclosed gears running in oil; and a weatherproof motor.

(Product of Beaver Pipe Tools, Inc., Dept. CP, Dana Ave., Warren, Ohio . . . or for more information reader may simply check CP 3682 on handy Reader Service slip between pages two and three.)

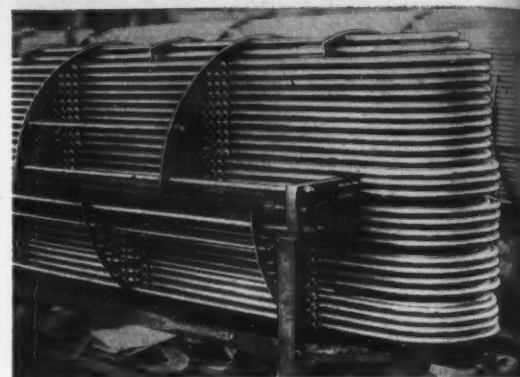
Rusted nuts and bolts loosened with aerosol spray

A rust-cutting oil, sprayed from an aerosol can at the flick of a finger, helps loosen corroded nuts, bolts, and studs. Product, according to manufacturer, is particularly useful in unfreezing rusted fastenings on hard-to-get-at equipment like crossarm braces, switch gear boxes, and similar power-line components.

An easy-to-hold six-ounce can dispenses a fine spray of rust-cutter when valve is depressed. After a short spray from a distance of 6 to 8", a two minute wait usually permits compound to eat into rust so part can be loosened easily.

(Freon, used as propellant in can, is a product of E. I. DuPont de Nemours and Co., Dept. CP, 7522 Nemours Bldg., Wilmington, Del.)

("Rust-Cutter" is product of James R. Kearney Corp., Dept. CP, 4236 Clayton Ave., St. Louis 10, Mo. . . or for more information check CP 3683 on handy form, pages 2 and 3.)



**...another industry
that uses ELECTRUNITE
Heat Exchanger Tubes**

It takes uniformly ductile tubing . . . easily workable . . . to make these hairpin bends. Uniform wall thickness is important, too. And so are uniform diameter, uniform concentricity and uniform strength.

These are some of the reasons why this important industry uses Republic ELECTRUNITE carbon and stainless steel electric-weld tubes in almost all stages of production. Other advantages are: full-normalized treatment that makes tubes uniformly ductile for predictable roller-expansion into the tube sheets; fine surface that helps resist corrosion; no longitudinal thin spots; smooth bending, even to short radii.

Whether you're planning new equipment or retubing, it's economical to specify Republic ELECTRUNITE Heat Exchanger Tubes.



STEEL AND TUBES DIVISION
REPUBLIC STEEL CORPORATION

206 EAST 131st ST. • CLEVELAND 8, OHIO

Republic
ELECTRUNIT

BOILER, CONDENSER AND HEAT EXCHANGER TUBES

ELECTRUNITE—The Original Electric Welded Boiler Tube

When inquiring check CP 3684 on handy form, pgs. 2-3

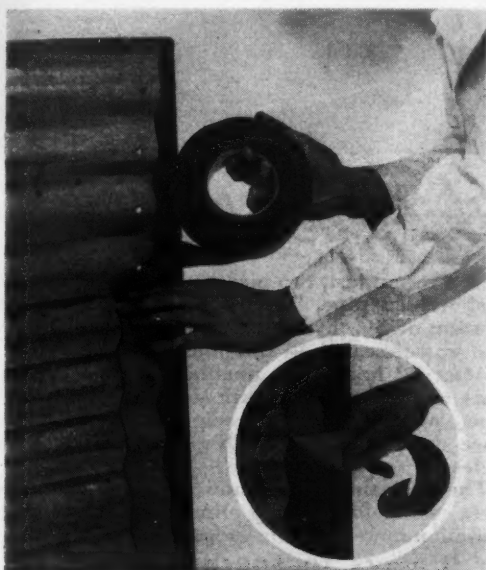
CHEMICAL PROCESSING

**High resistance to deterioration
offered by rubber sealer
in ribbon form**

Uses: As an effective weather-proof, water-tight seal. Also may be used in gasketing applications in building, in air conditioning and ventilating installations, and like jobs.

Features: Ribbon form of sealer aids application. Material has high resistance to deterioration. Tests have shown: 1) after more than 1400 hr exposure in accelerated weather test, a 1/16" film of material showed no loss of adhesion to aluminum while retaining resiliency and flexibility; and 2) a ribbon of the material, 1/16" thick, after aging one hour at -40°F is said not to crack when bent over a 2" radius.

Description: Fabric-reinforced, black synthetic rubber sealer is easily applied by simply laying or pressing ribbon on one surface before riveting, screw-



Ribbon form of rubber sealer makes application easy

ing, or bolting second surface to first. Adhesion properties are such that ribbon will stay in place on vertical or overhead surfaces during assembly operations. It can be stripped off and reapplied, if necessary.

Because of cloth reinforcement, sealer ribbon does not stretch or sag during application. It thus eliminates variations in thickness and poorly sealed joints. Product is non-shrinking, contains no solvent, and is not a fire hazard. It is not resistant to oil, gasoline, or other solvents.

Ribbon sealer is available as packaged rolls in 1/32" and 1/16" thicknesses, in seven widths ranging from 1/4 to 2", and in lengths of 100 and 200 ft.

(Ribbon sealer EC-1202 is a product of Adhesives and Coatings Div., Minnesota Mining and Mfg. Co., Dept. CP, 423 Piquette Ave., Detroit 2, Mich. . . . check CP 3685 on handy form, pages 2 and 3.)

Meeting Your Process Plant Steam Needs

FOR CONSTANT STEAM LOAD—

**FW PACKAGE
STEAM GENERATOR**

FOR PEAK PROCESS LOADS—

**FW STEAM
ACCUMULATOR**

FOSTER WHEELER offers a process-steam system to supply economically a constant power-steam load of 10,000 to 30,000 lb/hr and automatically take the "swings" of intermittent high-steam demand.

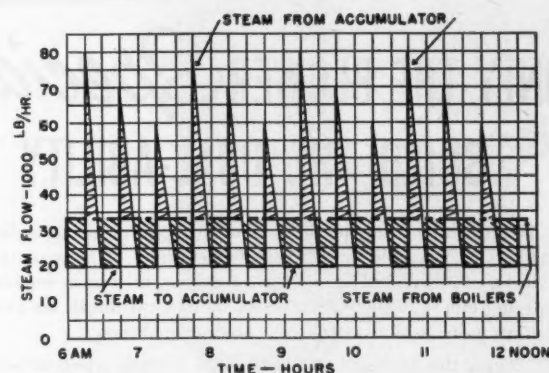
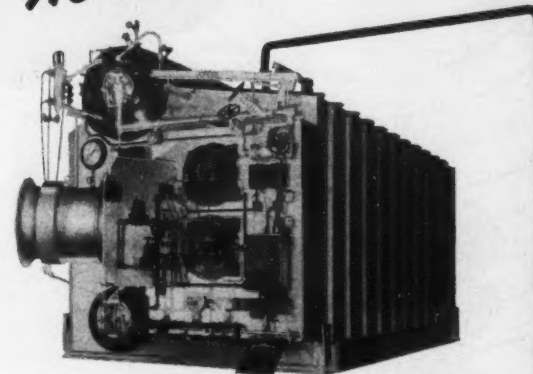
Here's a typical example of an installation in which the saving would be at least \$60,000 over a single boiler to meet the maximum load: This processing plant required a base load of 20,000 lb/hr of steam at 240 psi, and 40,000 to 60,000 lb/hr of low-pressure steam at 100 psi for process work. Peak process-steam load intermittently reaches 80,000 lb/hr.

With the package steam generator operating at its most economical constant rate, the 1030 cu ft accumulator will receive, condense and store steam during periods of low process-plant demand and return it to the steam lines during periods of high demand in the processing departments. Thus a "peak load" boiler becomes unnecessary.

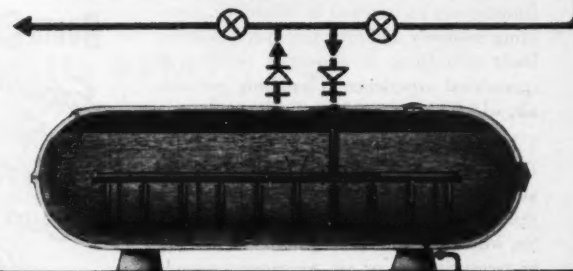
With this combination of a FW package generator and accumulator: **YOU SAVE** on initial costs, installation costs and maintenance costs; **YOU GET** high availability, fully automatic control and operation, and maximum efficiency.

If you are expanding your steam plant, or contemplating the installation of new equipment to meet increased process load, write for further information on a FW steam generator-accumulator system to meet your needs.

FOSTER WHEELER CORPORATION
145 Broadway, New York 6, N. Y.

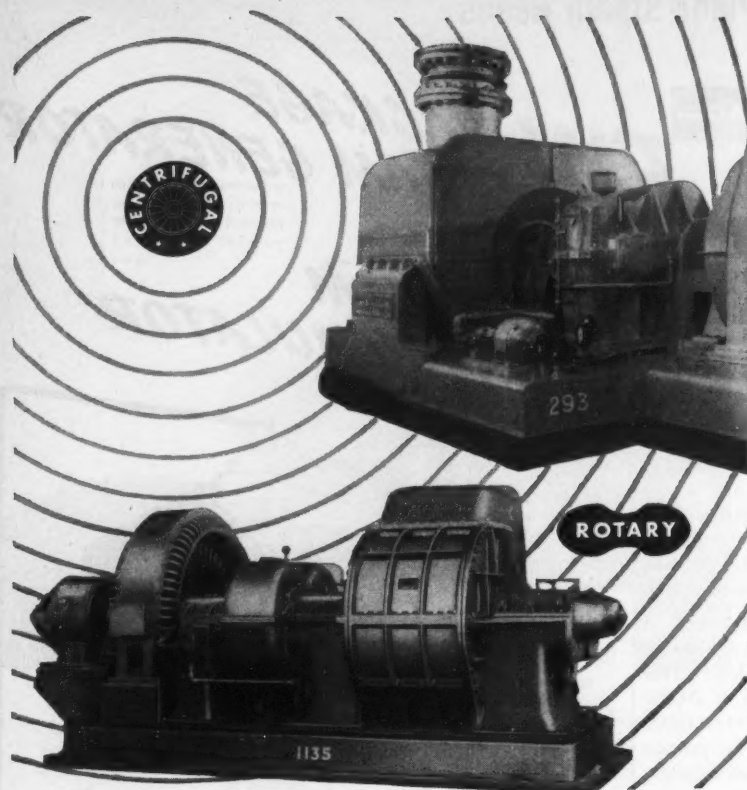


Steam flow chart showing charging and discharging of accumulator.



FOSTER  WHEELER

When inquiring check CP 3686 on handy form, pgs. 2-3

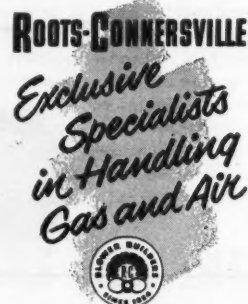


ONLY THE BLOWER *Specialists* BUILD THE DUAL-ABILITY LINE

To meet the varying problems of handling air or gas, in industrial processes, Roots-Connersville builds two complete lines of blowers and exhausters—Rotary Positive and Centrifugal. Together, they cover capacity requirements from 5 cfm to 100,000 cfm in single units. Centrifugals are available in multi-stage units, as illustrated, or in single-stage types.

Thus, this exclusive *dual-ability line* permits selection (without prejudice as to types) to meet the needs of most moderate pressure applications. Regardless of their sizes or types, R-C Blowers are unmatched in reliability, operating economy and long-time performance. Built into them is almost a century of specialized experience in handling gas and air, which is our exclusive business.

In addition to blowers and exhausters, R-C products include a wide range of gas and vacuum pumps, meters, inert gas generators and other related equipment. So, whenever you have a need for moving or measuring gas or air, we suggest consultation with the R-C Specialists.



ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.
536 Richmond Ave. • Connersville, Indiana

When inquiring check CP 3687 on handy form, pgs. 2-3

CONSTRUCTION

Size selector for steel plates

Size selector is a durably-made plastic slide rule that determines the longest and widest steel plates obtainable in any desired thickness from company's facilities. These sizes range from 24 to 195 inches in width, or from 3/16 to 25 inches in thickness.

Reverse side of the selector permits calculation of weights of rectangular and circular steel plates. A table of decimal equivalents and weights is also included.

(Selector is available from Lukens Steel Co., Dept. CP, Coatesville, Pa. . . . or for more information check CP 3688 on handy form, pages 2 and 3.)

Small amount of chemical will condition stubborn clay soils

As little as 0.2% chemical by weight of dry soil is said to condition the most stubborn clay soils. Soil conditioner, Tronatil, contains vinyl acetate-maleic anhydride copolymer resin. It is compounded with a granular type of carrier which is said to improve the effectiveness of the product. Use of this material is licensed under patents recently issued to the Monsanto Chemical Corp.

(Product of Eston Chemical Div., American Potash & Chemical Corp., Dept. CP, 3100 E. 26th St., Los Angeles 23, Calif. . . . or for more information check CP 3689 on handy form, pages 2 and 3.)

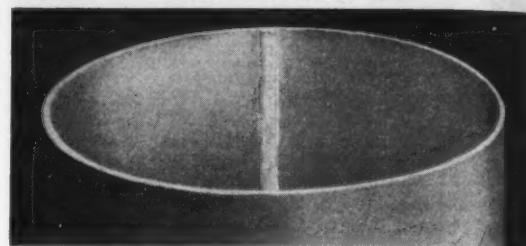
A picture-story-tour of wire rope manufacture

Booklet, in 56 continuous scenes (one to a page like a film showing), takes reader on a picture-story-tour of wire rope making.

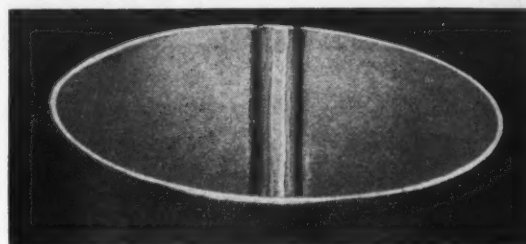
Starting with wire rods, tour takes in metallurgical checking, wire drawing, testing, rope making, and includes slings, aircraft cable, and cable assemblies.

Booklet 5312 is issued by Advertising Dept., Macwhyte Co., Dept. CP, 2936 14th Ave., Kenosha, Wis. When inquiring specify CP 3690 on handy form, pages 2 and 3.

After a 32-hour acid test . . .



this pipe stood up



this pipe did not

In a recent test, two pieces of 6" O. D. stainless steel welded pipe, Type 316, were placed in a solution of 3% hydrofluoric and 10% nitric acid. One was annealed — the other was not.

After 32 hours, the unannealed pipe (at bottom) was corroded on each side of the weld heat zone, where carbide precipitation had taken place during welding. This pipe was rendered useless.

The annealed piece, however, was sound as ever. Annealing having eliminated carbide precipitation, no corrosion set in.

It pays to specify SWEPCO Annealed Machine Welded Pipe

For long service and best results, specify Swepeco machine welded pipe annealed, pickled and passivated. If contamination only is your problem, ask for Swepeco select or mill grade.

Swepeco pipe, tubing and welding fittings, 3" to 18" I. P. S., are obtainable in stainless steel, nickel alloys, Carpenter "20," Hastelloy alloy, and other metals. Material is available for FAST DELIVERY and can be furnished in economical long lengths.

Lick the corrosion problem in your plant by writing today for complete illustrated information.

**STAINLESS WELDED
PRODUCTS, INC.**

247 Cornelison Avenue
Jersey City 2, N. J.
Tel: HEnderson 5-0123

Distributors in principal cities.
Export Dept.: Box 350, Port Washington, N. Y.

When inquiring check CP 3691 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Reduces sagging or excessive convexity on welds made in any position

Shielded arc, mild steel E-6010 electrode is designed for all position welding with DC. It is used for welding of all types of joints in the overhead or vertical position, and is said to be especially well suited for "vertical up" welding. It produces flat faced fillets when welded in a vertical position and reduces sagging or excessive convexity on welds made in any position.

Electrode may be used for welding galvanized, dirty, or rusty plate. Arc characteristics secure excellent root penetration, and weld is fast freezing with a small volume of slag. Deposits have excellent physical properties, according to manufacturer. Electrode is available in 14" lengths and in 1/8, 5/32, and 3/16" diameter sizes.

("Fleetweld 51" is a product of The Lincoln Electric Co., Dept. CP, 22801 St. Clair Ave., Cleveland 17, Ohio . . . or for more information check CP 3692 on handy form, pages 2 and 3.)

Air removed from hot water heating systems by simple, positive device

Uses: For automatic removal of air from forced circulation hot water heating systems.

Features: Device is cast in one piece with no parts to loosen, corrode, or rattle. Installation and operation is said to be simple and positively requiring no draining of water, no cutting or adjusting.

Description: Air-Scoop is designed with interior baffles to direct the flow of air liberated by heated water upward to an escape valve where air can then be vented off, thereby removing it from the water lines. Air not vented directly from device is passed



Unit is cast in one piece

into an expansion tank directly above where it acts as a cushion. Should air completely fill tank and back-up, it is vented through valve without disturbing the rest of the system. Air-Scoop is available in sizes from 3/4 to 2 1/2". Maximum working pressure is 30 psi. Total length of 2 1/2" unit is 11 1/2" with a 7" height.

(Product of Taco Heaters, Inc., Dept. CP, 137 South St., Providence 3, R. I. . . or for more information check CP 3693 on handy form, pages 2 & 3.)

Nothing takes the place of experience



THAT SERIAL NUMBER is the strongest possible certification of the valuable "know-how" back of Elliott steam jet ejectors and their application. Over thirty thousand is a formidable number of installations, easily covering many times over every possible process for which vacuum is used, and every possible set of conditions under which steam jet ejectors can be adapted to operate most profitably.

All the experience and data behind these multitudinous ejector set-ups is available to assure the success of your installation, whether it requires the use of a simple single stage ejector, or a huge multi-stage unit with intercondensers to supply absolute pressures as low as .003 in. mercury. The cooperation of Elliott engineers is yours for the asking.

HERE IS COMPLETE DATA . . .

Five bulletins that cover the complete range of commercially obtainable vacuum. Contact your nearest Elliott representative, or write, describing your vacuum requirements and operating conditions, to Elliott Company, Jeannette, Pa.

ELLIOTT Company
INDUSTRIAL PROCESS DIVISION

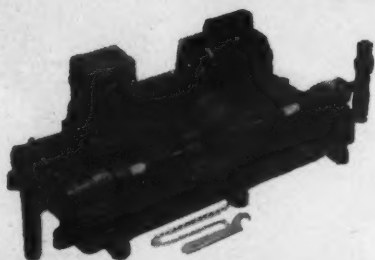


G3-3

When inquiring check CP 3694 on handy form, pgs. 2-3

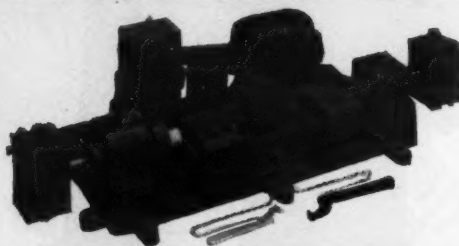
If you meter or proportion
small volume flows...

**THERE IS
A HILLS-McCANN
"U" TYPE PUMP
TO DO THE JOB**



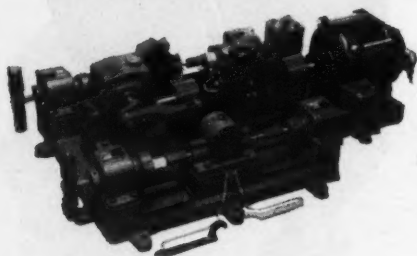
STANDARD 1, 2, 3 or 4 FEED UNITS

Standard "U" Pumps are available in maximum capacities from 0.10 to 24.0 gal. per hr. per feed. Operating pressures from 125 to 5000 psi.



JACKETED UNITS

For handling materials that require heat or refrigeration, "U" Pumps can be supplied with either or both jacketed liquid ends and check valves.



VARIABLE SPEED UNITS

"U" Pumps can be furnished with a variable speed drive which permits varying capacity remotely or automatically when combined with the proper auxiliary equipment.

Write for Catalog:

Catalog UP-52R gives full data on all sizes and types of Hills-McCanna "U" Type Pumps. Write for a copy, today. Hills-McCanna Co., 2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANN

metering and proportioning pumps

Also Manufacturers of:

SAUNDERS TYPE DIAPHRAGM VALVES
FORCE FEED LUBRICATORS • MAGNESIUM ALLOY SAND CASTINGS

When inquiring check CP 3695 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

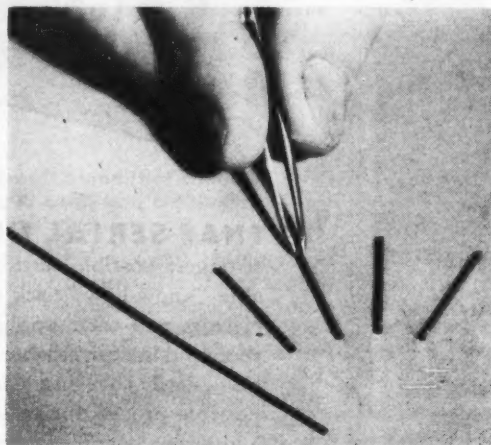
Unusually small sizes of tubing drawn from commercial titanium...

outside diam is .0455" with a .00225" wall

Uses: At present, for experimental work in the electrical, electronic, and chemical industries. Eventually for widespread use in industry where ultra-small tubing with the properties of titanium is required.

Features: Tubing, drawn from commercially pure titanium, has an OD of only .0455"; wall thickness is .00225".

Description: Since titanium will absorb all of the common gases from the atmosphere, company vacu-



Experimental cathodes of ultra-small titanium tubing

um anneals all thin-wall titanium tubing to avoid embrittlement. This small diameter tubing is added to company's line of titanium tubing in sizes from 1/8 to 1 1/2" OD, with wall thicknesses from .004 to .187".

(Product of Superior Tube Co., Dept. CP, Norristown, Pa. . . or for more information check CP 3696 on handy Reader Service slip, pages two and three.)

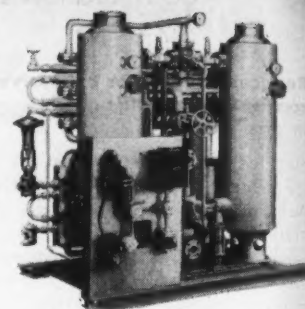
Fast setting plus heat resistance offered by versatile emulsion adhesive...

good flexibility retained at temperatures up to 300°F for intermittent periods

Uses: For bonding a variety of materials such as leather, paper, fabrics, wood, metal, plastic, and rubber.

Features: This emulsion provides a strong bond without application of heat for curing, and is said to resist temperatures up to 300°F for intermittent periods and retain good flexibility.

Description: Material, designated 1294-31L, is a wet-stick adhesive. Ordinary procedure calls for coats of adhesive on one or both surfaces and the



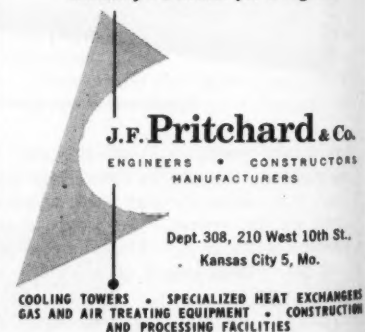
*This is a Pritchard
HYDRYER*—the choice
of critical buyers in the
petrochemical industry
for efficient, dependable
dehydration!*

This quality packaged unit promises long, trouble-free operation in drying compressed air and other gases for instrument and process controls. Adsorbents are carefully selected for your drying requirements. Completely factory assembled.

Custom units designed for any special need. To cut dehydration costs, contact Pritchard today.

* Registered Trade Name

Industry's Partner for Progress



Dept. 308, 210 West 10th St.
Kansas City 5, Mo.

When inquiring check CP 3697
on handy form, pgs. 2-3

CHEMICAL PROCESSING

formation of a bond within one minute. (Cement does not possess dry-tack properties). Mild heat with pressure will promote formation of a strong bond, but is not necessary for curing. Cement may be applied by brush, spray, or spreader knife and is available in viscosities ranging from 40 to 45,000 cps. Color of adhesive is dark brown.

(ARCCO 1294-31L adhesive is a product of American Resinous Chemicals Corp., Dept. CP, 103 Foster St., Peabody, Mass. . . . or for more information check CP 3698 on handy Reader Service slip, pages two and three.)

Economy and effectiveness of furnaces & boilers increased by cleaner

Uses: For cleaning furnaces and boilers, and other heating plant equipment.

Features: Unit's thorough removal of ash, scale, and soot is said to contribute greatly to more heating plant effectiveness and fuel consumption economy. A design feature of the equipment enables motor unit to be used separately as a powerful blower or hand cleaner.

Description: Cleaner has a 1 hp, 115 v AC/DC type motor with ball-type bearings packed in lubricant. Its filter is made from specially woven fabric to permit a minimum of back pressure while providing 1625 sq in of filtering area. Bag has a positive locking coupling with a clamp to allow easy cleaning.



Unit may be used as a powerful blower or as a hand cleaner

Made of heavy sheet steel with a smooth, easily cleaned metallic gray finish, the container has a capacity of 1.04 bushels. Dimensions of unit are: height, 32 1/2"; width, 24 1/4"; tank diameter, 17". Weight is 43 lb. Soft rubber tread casters with top swivel bearings permit smooth rolling of unit. Also provided is a 22 ft heavy duty, three conductor, rubber cord with protective ground wiring.

Standard cleaning tools furnished with the unit include a 10 ft rubber hose and adapter, 6 ft metal hose, utility nozzle, slide-on brush, wire brush, rubber blower and suction tool, hose and blower coupling, screen guard, scraper nozzle, and straight flat tube. Also available is a complete set of attachments for cleaning flues, air ducts, and chimneys.

(Model P-908F furnace and Boiler Cleaner is a product of Dept. KP, Premier Co., Dept. CP, 755 Woodlawn Ave., St. Paul 1, Minn. . . . or for more information check CP 3699 on handy form, pages 2 and 3.)

When fluid flow connections
must combine flexibility
with corrosion resistance

Specify
CMH REX-FLEX
The Stainless Steel
FLEXIBLE METAL HOSE

You can stop dangerous and wasteful leakage of toxic or corrosive substances by using REX-FLEX as the flexible link in connections subject to vibration, flexation, misalignment or expansion and contraction. CMH REX-FLEX offers complete dependability even where the frequency of the motion is high. The inherent characteristics of stainless steel coupled with Flexonics' manufacturing "know-how" assure a corrosion resistant unit that will stand up in the toughest service.

When you specify REX-FLEX stainless steel hose you put to work for you a knowledge of the use of flexible stainless steel components that is unequalled. Whatever your stainless steel hose problem, it will pay you to bring it to Flexonics Corporation. For specific recommendations just send an outline of your requirements.

REX-FLEX TYPE RF-51—
Sizes 1/4" through 2", I.D., for temperatures to 1,600° F working pressures to 4700 psi; with metal braid covering. Available in standard or heavy wall types. Also supplied unbraided as Type RF-50.

REX-FLEX TYPE RF-41—
Sizes 1/4" through 6", I.D., for temperatures to 1,600° F working pressures to 525 psi (1 ply) and 1050 psi (2 ply); with metal braid covering. Open and close pitch types and standard and heavy wall constructions supplied. Also available unbraided as Type RF-40.

REX-WELD TYPE RW-81 (Stainless)—Sizes 1/4" through 2", I.D.; heavy wall hose for temperatures to 1,600° F, with metal braid covering. Also available unbraided as Type RW-80 (Stainless).

See our catalog in Sweet's Plant Engineering File or Chemical Engineering Catalog.

Flexon identifies CMH products that have served industry for over 50 years.



CHICAGO METAL HOSE Division

Flexonics Corporation 1319 South Third Avenue, Maywood, Illinois

In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

Flexible metal hose

Expansion joints

Aircraft components

Metallic bellows

When inquiring check CP 3700 on handy form, pgs. 2-3

ROTOJET Junior TUBE CLEANERS

Powerful, Light-weight
for SMALL TUBES

Rotojet Junior Tube Cleaners are powerful, yet light in weight. They are fed easily through the tubes with the operating hose, and can be shifted quickly from tube to tube. Simple design and precision construction assure long service, efficient use of power, and freedom from trouble. Clean tubes from .495" to 2.062" I.D.

Bulletin J-410 shows Rotojet Junior motors and accessories to help you do a faster, more thorough tube cleaning job. Send for your copy.



S32 ROTOJET Junior
Air-driven Motor, cone
cutter, universal joint.

C439 ROTOJET Junior
Air-driven Motor, uni-
versal joint, drill head

C324 ROTOJET Junior
Water-driven Motor,
univ. joint, pivot head.

C434 ROTOJET Junior
Air-driven Motor, flexi-
ble coupling, expanding
brush.



ELLIOTT COMPANY-ROTO DIVISION

141 Sussex Avenue, Newark 1, N. J.

When inquiring check CP 3701 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Safety featured by solvent used for degreasing in industry . . .

self-emulsifying, self-scouring compound is available in pint cans

Hydro-degreasing compound for use in cleaning in various trades and industry is a self-emulsifying, self-scouring solvent which features safety in handling plus high-speed cleaning action, according to manufacturer.

Solvent, available in pint cans, has no flash point, is non-caustic, non-acidic, emits no toxic vapors, and does not tend to de-fat skin and hands. It is reported that it can be safely used on any surface that can be cleaned with soap and water.

By reason of the self-emulsifying action of the solvent, there is no tendency to clog drains or sewers since heavy oil or grease accretions are completely emulsified in a safe oil-in-water milky mixture which is easily removed by sluicing with a water hose.

(Gunk G-P is a product of Curran Corp., Dept. CP, 96 S. Canal St., Lawrence, Mass. . . or for more information check CP 3702 on handy form, pages 2 and 3.)

Fabrication simplified and quality of members anchored to concrete improved by use of studs

Uses: For anchoring steel structural members to concrete or masonry.

Features: These concrete anchor studs are designed to simplify fabrication and improve the quality of steel angle curbs, trench frames, column guards, joists, and like structural members.

Description: High quality cold-drawn steel with a tensile strength of 75,000 to 85,000 psi is used in fluxed anchor studs which are welded in the angle or on the faces of steel members without causing any distortion. Accessories for use with portable stud welding equipment insure accurate alignment so that work can be done at the job site where necessary. Simple table-mounted production units designed for use in fabricating shops will install anchor studs at rate of four or five per minute.

(Studs are products of Nelson Stud Welding Div., Gregory Industries, Inc., Dept. CP, Lorain, Ohio . . . or for more information check CP 3703 on handy form, pages 2 and 3.)

Battery-powered unit eliminates ladders and safety hazards from overhead work . . .

maintenance man made 19 feet tall can do work of gang and save costs

Uses: In overhead maintenance problems, for reaching ceiling objectives.

Features: Battery-powered unit enables one man to do the work formerly accomplished by a gang. Ladders and scaffolds are eliminated and with them,

RE-ROOF AT 1/2 COST



Buildings like these
all over America
are saving with
Tropical's New
COLD PROCESS
system!

NEW ROOFING MATERIAL THAT
STAYS *Plastic* FOR EXTRA
YEARS OF SERVICE

Re-roof better . . . save 50% in cost! Tropical system uses Cold-Process Roofkoter, specially developed triple-thick felt, unskilled labor! No fire hazard. Roof doesn't shrink, crack, powder or dry out. You get durable, trouble-free, weather-tight roof . . . the Tropical way!

Free Your business letterhead request brings a FREE copy of "Saving Old Roofs." Get these money-saving facts! Write today!

THE TROPICAL PAINT & OIL CO.
1128-1230 W. 70th., Cleveland 2, Ohio

Heavy-Duty Maintenance
Paints Since 1883

TROPICAL

Subsidiary
of Parker
Rust Proof Company

When inquiring check CP 3704
on handy form, pgs. 2-3

CHEMICAL PROCESSING

many safety hazards. Costs are saved by more efficient use of time on the job.

Description: Platform of Lift-A-Loft fully raised is 12'8" above floor, literally making the maintenance man 19 feet tall. One man rides the unit to its destination, pushes a button, and is up in the air ready to work. No time is lost. Platform is equipped to carry everything needed, including enough cleaning solution and clean water for a day's work. There are no hazards to hamper work progress.

(Lift-A-Loft is a product of Barrett-Cravens Co., Dept. CP, 4609 S. Western Ave., Chicago, Ill. . . . or for more information check CP 3705 on handy form, pages two and three.)

Working pressures to 800 psi offered by lubed plug valves

Comprehensive 30-page booklet describes line of lubricated plug valves, steel and semi-steel, designed for various working pressures from 175 to 800 psi, with test pressures registering a large safety factor.

Booklet shows sectional views of various sized plug valves, and has dimension tables keyed to sections and to appropriate valve accessories.

An entire section of booklet is devoted to accessories such as: remote control devices, adaptors, wrenches, locking devices, socket wrenches, and extensions. Specifications are also given for floor stands, chain wheels, pressure relief valves, water tight gear housings, and road boxes.

Form 180 is available from Ohio Injector Co., Dept. CP, Wadsworth, Ohio. When inquiring specify CP 3706 on handy Reader Service slip, pages two and three.)

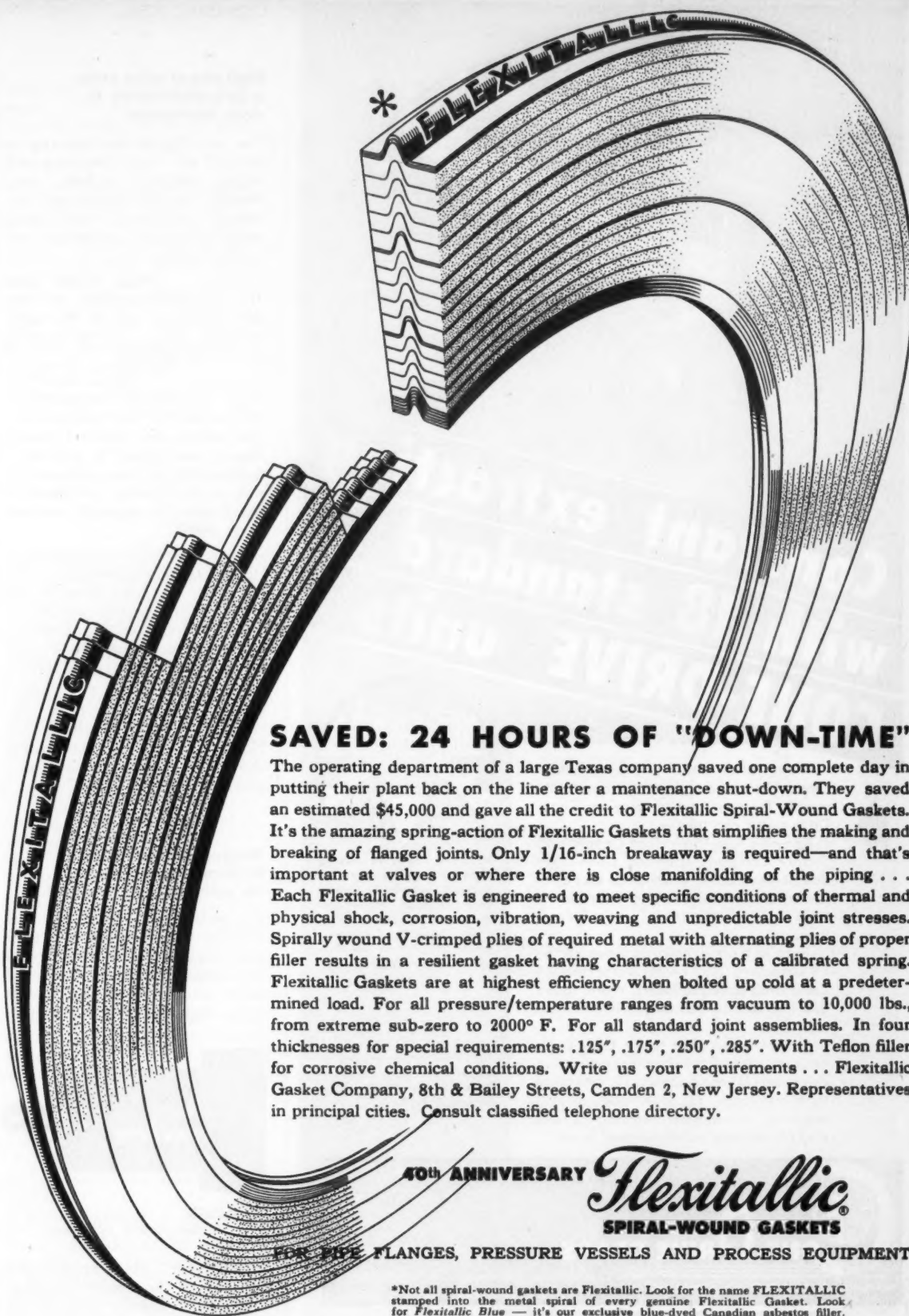
Standard line of glass fiber insulations are designed for specific uses

Standard line of Aerocor-type products, designed for specific markets and uses, has been added by manufacturer. Heretofore, the material, a superfine glass fiber, wool, as downy resilient blankets had been cut and shaped for various applications in several fields.

Included in this line are: Aerowrap, a special type of resilient, lightweight Fiberglas blanket for wrap-around insulation of pipes; flexible duct insulation, a lightweight fine fibered blanket-type insulation for exposed or concealed, hot or cold air ducts; and Sonocor, a lightweight sound absorbing medium for use with metal pan acoustical systems.

Other insulations in the line are those for metal buildings, flexible ducts, appliances, furnaces, and air conditioning equipment — to name a few.

(Products of Owens-Corning Fiberglas Corp., Dept. CP, 1833 Nicholas Bldg., Toledo 1, Ohio . . . or for more information check CP 3707 on handy form, pages 2 and 3.)



SAVED: 24 HOURS OF "DOWN-TIME"

The operating department of a large Texas company saved one complete day in putting their plant back on the line after a maintenance shut-down. They saved an estimated \$45,000 and gave all the credit to Flexitallic Spiral-Wound Gaskets. It's the amazing spring-action of Flexitallic Gaskets that simplifies the making and breaking of flanged joints. Only 1/16-inch breakaway is required—and that's important at valves or where there is close manifolding of the piping . . . Each Flexitallic Gasket is engineered to meet specific conditions of thermal and physical shock, corrosion, vibration, weaving and unpredictable joint stresses. Spirally wound V-crimped plies of required metal with alternating plies of proper filler results in a resilient gasket having characteristics of a calibrated spring. Flexitallic Gaskets are at highest efficiency when bolted up cold at a predetermined load. For all pressure/temperature ranges from vacuum to 10,000 lbs., from extreme sub-zero to 2000° F. For all standard joint assemblies. In four thicknesses for special requirements: .125", .175", .250", .285". With Teflon filler for corrosive chemical conditions. Write us your requirements . . . Flexitallic Gasket Company, 8th & Bailey Streets, Camden 2, New Jersey. Representatives in principal cities. Consult classified telephone directory.

40th ANNIVERSARY *Flexitallic*
SPIRAL-WOUND GASKETS

FOR PIPE FLANGES, PRESSURE VESSELS AND PROCESS EQUIPMENT

*Not all spiral-wound gaskets are Flexitallic. Look for the name FLEXITALLIC stamped into the metal spiral of every genuine Flexitallic Gasket. Look for Flexitallic Blue — it's our exclusive blue-dyed Canadian asbestos filler.

When inquiring check CP 3708 on handy form, pgs. 2-3

Constant extracting with 18 standard CONE-DRIVE® units

Month-after-month operation under continuous load is a grueling measure-of-quality for any type of gearing. Cone-Drive gears can take it.

Knowing this, The Vulcan Copper and Supply Company specified Cone-Drive double-enveloping worm-gear speed reducers to turn the rotating impellers of their "Kennedy" Counter-Current Solvent Extractor.

Impellers are turned continuously by 18 standard 2½" center distance 50/1 Cone-Drive speed reducers. Worm speed is 6 rpm and output torque is 900 inch-pounds.

Other factors that make Cone-Drive gears a 'natural' for chemical processing drives are: (1) compactness, (2) resistance to shock loads, (3) high load-carrying capacity, (4) minimum maintenance costs and (5) delivery as off-the-shelf units.



Standard double-enveloping Cone-Drive gearsets and reducers have greater contact per tooth, more teeth in contact, increased load capacity, greater shock load capacity, longer life, lighter weight—and lower overall cost.

For information on use of Cone-Drive gears and reducers in your field, ask for Bulletin PCP-33.



When inquiring check CP 3709 on handy form, pgs. 2-3

CONSTRUCTION

High nickel alloy strip is precision-rolled to close tolerances

Uses: Typical uses for strip in chemical and food processing and bottling industries include: temperature control instruments; recording instruments; motor parts; permanent magnet assemblies; and circuit breakers.

Features: High nickel alloy strip is precision-rolled to very close tolerances, and to thin gage and foil. Strip is said to be available in any quantity.

Description: Alloys (which include temperature compensation, low expansion, high permeability, glass sealing, and electrical resistor alloys), are rolled to customer's specifications by this company, in strip up to 8" wide, and down to .0005" thin, to tolerances as close as $\pm .0001$ ".

Strip is processed on precision 2-High, 4-High, and Sendzimir rolling mills, the latter being a 12-High cluster-type mill capable of rolling at 300 fpm. Final slitting to close tolerance widths is performed by precision gang slitters.

(Product of Industrial Div., American Silver Co., Inc., Dept. CP, 36-07 Prince St., Flushing 54, N. Y. . . or for more information check CP 3710 on handy form, pages 2 and 3.)

Rugged design featured in clamp-type air cylinder

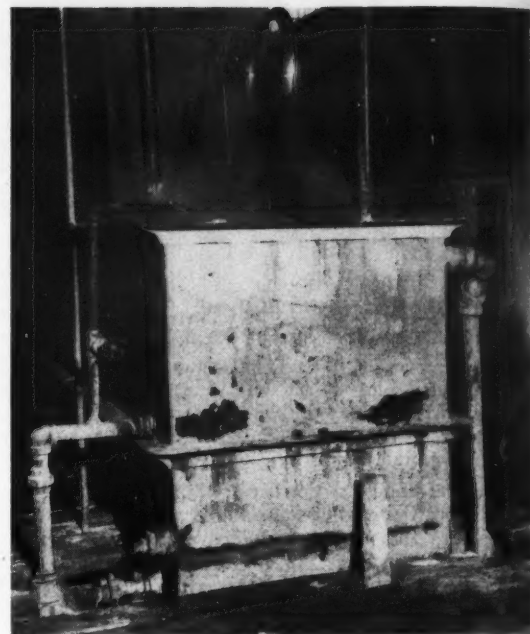
Featuring rugged design and construction, this 1-½" bore clamp-type, single-acting, air return cylinder is manufactured in 1" and 2" stroke models. Body structure is of bar stock aluminum as is mount-



Available in 1 and 2" stroke models — with 1½" bore

ing end plate. Holes are provided in body for horizontal mounting. One model permits vertical and horizontal mounting.

Are Your \$Dollars\$ Rusting Away?



If this picture could be taken in your plant —

You've got problems!

You can stop rust and corrosion, increase wear resistance and make Your Maintenance Dollar stretch further with

TOTRUST INSTANT DRY ENAMEL SYSTEM

It has added years of life and beauty to previously unsightly and deteriorating fixtures and equipment.

Your Answer to ALL Metal Painting on Rusted, Clean, New, Old, Damp, Dry, Painted or Unpainted, Interior or Exterior surfaces — including Galvanized and Aluminum.

1. Dries in MINUTES, not hours.
2. Highly Resistant to chemicals.
3. Heavy Duty Tough, yet not Brittle.
4. Brush or Spray, Free Flowing . . .

24 COLORS

Send today for color sheet and Bulletin 359P



When inquiring check CP 3711 on handy form, pgs. 2-3

CHEMICAL PROCESSING

What's eating your stainless steel tanks?

For more than a quarter century Metal Glass Products Company of Belding, Michigan has specialized in the manufacture of stainless steel tanks for all phases of the processing industries. In that time they have come to know the advantages and limitations of stainless steel fabrications for industry.

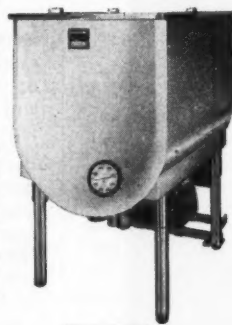
The design engineers at Metal Glass realize that stainless steel is not the cure-all to corrosion and wear that many believe it to be. They know that there are many acids, salts and organic substances that will attack stainless steel tanks. They realize that special care must be taken in every step of installation and fabrication to keep their tanks unaffected when used with various liquids. The performance of the units in actual plant operation depends to a large extent upon the manner in which the installation was made and the daily treatment accorded the equipment.



TYPE "CK"

For these reasons Metal Glass attempts to make every unit a custom built model. Even the standard items illustrated in this article are precision built. Despite the care exercised in building standard units, there are many applications that call for a specially designed piece of equipment. It is in cases like these that it pays to call on Metal Glass. Our engineers working with your personnel can develop a tank to meet your exact requirements. Our engineering department is set up and maintained to help you on your special tank problems. We welcome the opportunity to work with you.

In addition to experience in the specific characteristics of metals with reference to corrosion resistance, heat transfer and general machinability, we can offer you considerable knowledge in insulating materials, types of refrigerants and metalizing processes.



TYPE "CMR"

Write us today for assistance or consultation on your problem.

STAINLESS STEEL SAN-I-TANKS
METAL GLASS PRODUCTS COMPANY

BELDING 11, MICHIGAN

DISTRICT OFFICES: New York • Chicago • Atlanta • Detroit
Pittsburg • Pasadena • Toronto

When inquiring check CP 3712 on handy form, pgs. 2-3

CONSTRUCTION

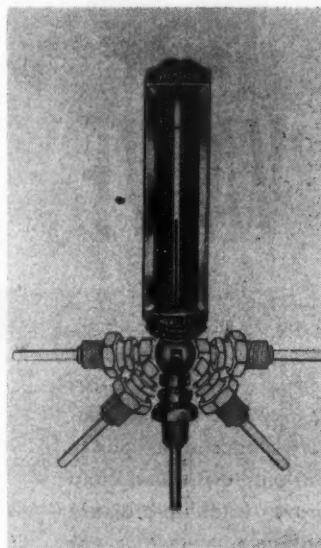
Piston rod is of stainless steel, piston is of brass, and piston seal is standard O-ring. A bronze bushing is provided for guiding of piston rod.

(Series 800 air cylinder is a product of Modernair Corp., Dept. CP, 400 Preda St., San Leandro, Calif. . . . or for more information check CP 3713 on handy Reader Service slip, pages 2 and 3.)

Mercury thermometer stem adjusts to any angle

easily installed unit
visibility is improved with

Any required angle, front to back, left or right, through 180° arc, can be obtained before, during, or after installation of mercury bulb thermometer, by simple adjustment of



a lock nut. Thermometer uses flexible metal capillary within a ball connection, with positive fusion of glass and metal components.

The Adjust-Angle thermometer reduces number of instruments required for replacement stock. Visibility at odd angles is facilitated with instrument and installation is simplified.

(Adjust-Angle thermometer is product of Weksler Thermometer Corp., Dept. CP, 52 West Houston St., New York 12, N. Y. . . . or for more information check CP 3714 on handy Reader Service slip, pages two and three.)

You can be sure GALLAHER CERTIFIED

RATINGS mean *Peak Performance*

HERE'S WHY

Gallagher ratings are the result of actual physical tests of the entire unit — not a fan wheel alone or other component, not interpolations of free air data, but a true picture of the unit as it operates under actual conditions.

Any other method of rating a power roof exhaustor will be inaccurate. Gallagher research has shown conclusively that the errors may run as high as 50% when ratings are mere theoretical calculations.

Gallagher units with patented, built-in scroll effect are the only power roof exhaustors which can develop high static pressures. With this feature, thousands of industrial applications are well within the range of economical power roof exhaustors. They have been rated in an independent laboratory under the direction of a nationally recognized authority under the conditions prescribed by NAFM and ASH&VE.

Before you buy power roof exhaustors we think you'll agree that these three questions should be answered to your satisfaction. 1. How were the tests conducted? 2. Did it include the whole unit and not a component? 3. What impartial authority conducted the tests? We think that you'll buy Gallagher Air-Vans.

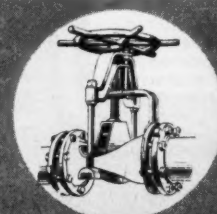
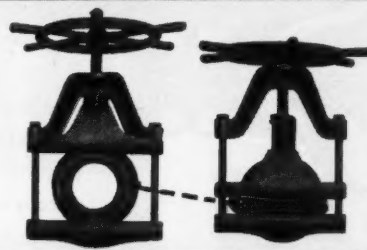
For full information write Dept C-6

The GALLAHER Company

1100 BROADWAY NEW YORK, N.Y. 10036

When inquiring check CP 3715 on handy form, pgs. 2-3

MASSCO-GRIGSBY RUBBER PINCH VALVES



for abrasive and corrosive pulps and liquids

IT'S HINGED . . . for longer wear.

MOLDED RUBBER resists abrasion and corrosion . . . gives long life without maintenance.

UNOBSTRUCTED FLOW PASSAGE . . . eliminates high friction loss.

Sizes 1" to 12"

WRITE FOR BULLETIN

The Mine & Smelter Supply Co.

DENVER 17, COLORADO

Salt Lake City, El Paso, 1745 Broadway, N. Y. C.
REPRESENTATIVES IN FOREIGN COUNTRIES

When inquiring check CP 3716 on handy form, pgs. 2-3

*TYPE

1000

VALVE



Any product of quality should be dependable when ordinary products fail. Sudden pressure fluctuations, dirt, scale and viscous matter prove "fatal" to ordinary pressure reducing valves.

The CASH STANDARD TYPE 1000 VALVE however, is designed to operate with complete dependability under the most difficult and unusual circumstances. Many of these units have been in service over 10 years and have never been taken "out of the line."

Truly an EXTRAORDINARY achievement of quality and design excellence.

*INSTALL CASH STANDARD "TYPE 1000" VALVES

CASH STANDARD

A. W. CASH COMPANY

DECATUR, ILLINOIS

CONSTRUCTION

"Burn out" eliminated by vacuum switch on portable pump

Uses: For industrial, farm, or marine use, unit will handle liquids ranging in viscosity from alcohol to syrups.

Features: Portable pump incorporates a vacuum switch to guard against "burn out" when liquid supply runs dry. Use of vacuum switch means that pump may be operated untended, and will shut itself off when pumping job is finished, according to manufacturer's report.

Description: Pump motor is a 1/4 hp, 110 v, heavy-duty capacitor type with a manual reset overload protector and a 5 ft cord. Unit



Unit may be operated untended and will shut itself off when pumping job is finished

weighs 27 lb and has a hinged carrying handle. It will lift water up to 10 ft unprimed, 22 ft primed, and has outside threaded ports for female garden hose couplings.

Pump has a hollow shaft that slips directly onto motor shaft. This design eliminates the need for a base plate or special coupling between pump and motor. Capacity is up to 5 gpm with pressures up to 30 lb.

(Product of Dept. KP Hypro Engineering, Inc., Dept. CP, 404 N. Washington Ave., Minneapolis 1, Minn. . . or for more information check CP 3717 on handy form, pages 2 and 3.)

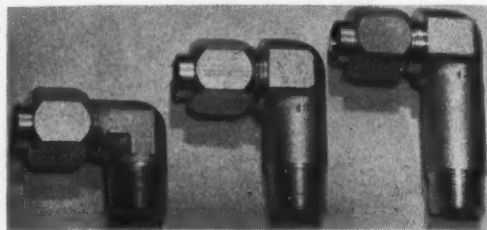
For more information on product at left, specify CP 3718 . . . see information request blank between pages 2-3.

CONSTRUCTION & MAINTENANCE

More flexibility allowed in piping with long and extra long male elbow fittings

Uses: Tube fittings will serve applications in industrial hydraulic systems; instrumentation; process piping in refineries, power and chemical plants; coolant and lubrication systems for machinery; fuel systems for truck pumps and diesel engines; and marine hydraulic systems.

Features: Long and extra long elbows provide more flexibility in installation. For example, shorter



Left to right, in photograph: standard, long, and extra long male elbows

standard shaped elbows may be "nested" within longer elbows thus permitting close, neat parallel lines.

Description: Standard stock of fittings is steel, with brass, stainless steel (type 316), and aluminum available on special order. Fittings as purchased include body nut and sleeve.

(Product of The Parker Appliance Co., Dept. CP, 17325 Euclid Ave., Cleveland 12, Ohio . . . or for more information check CP 3719 on handy form, pages 2 and 3.)

Steady-spray, hard-surfacing welding electrode can be used in any position

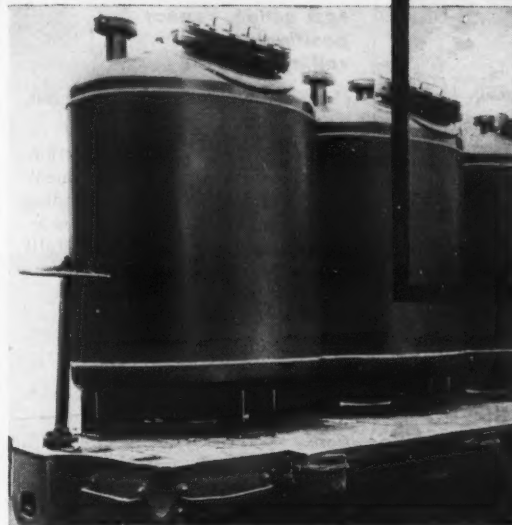
Uses: For build-up work and hard-surfacing applications wherein deposited metal can be machined or flame hardened. It is recommended where a higher hardness deposit is desired than that obtainable with electrodes used for under layers.

Features: Electrode, designated Type W-98, is a heavy-covered flame-hardening rod that can be used in all positions. Arc is of the steady-spray type.

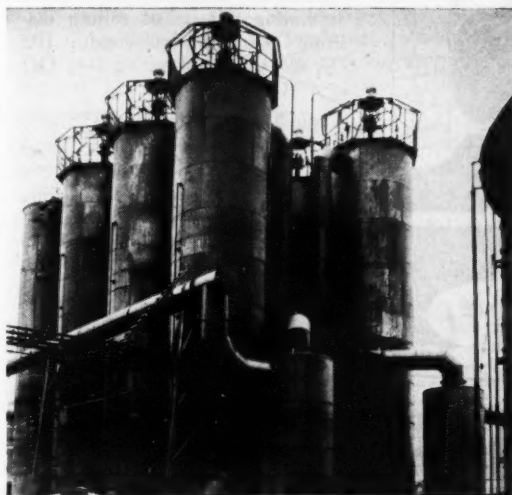
Description: Although the types of materials involved and the welding conditions can greatly affect the hardness of the deposited metal, generally the hardness will be approximately 250 Brinell as welded and it will flame harden to about 350 Brinell.

Electrode is color marked by a brown end and a white spot. It utilizes alternating or direct current, and is manufactured in $\frac{1}{8}$ to $\frac{1}{4}$ " sizes.

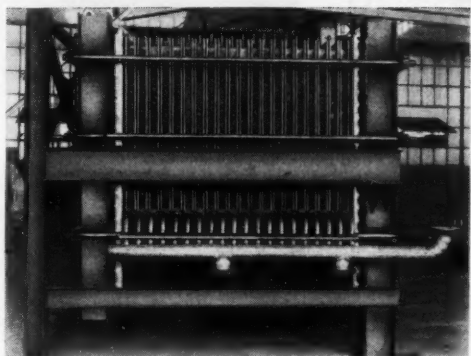
(Product of General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. . . . or for more information check CP 3720 on handy form, pages 2 and 3.)



Lead Lined Pressure Vessel



Benzol Plant Installation



Lead Filter

corrosion resistant lined equipment

Pioneers in Lead Lining

The Lined Products Division combines the world famous steel fabricating know-how of Treadwell with a pioneer's knowledge of the homogeneous lead bonding process. From the smallest vessel to gigantic columns, the Treadwell organization is ready to serve you from drawing board to plant site.

Plate Fabrication

The Treadwell organization has been closely identified with the chemical processing industries throughout 40 years of growth. During this period we have engineered and custom fabricated virtually every type of process equipment. With the Midland plant located in the Pittsburgh steel district near river transportation, Treadwell is well prepared to handle your heavy plate work.

Industries Served

It is easier to do business with someone who speaks your language. Treadwell engineers have a real working knowledge of specifications and performance requirements as they are applied in the process industries. Treadwell has designed, fabricated and erected lined and unlined equipment for leaders in the chemical, petroleum, textile, paper, cement, rubber, coal, steel, and virtually all of the heavy industries. In the field of atomic energy, a knowledge of lead construction together with know-how in steel makes Treadwell particularly well equipped to work with the industry.

Let TREADWELD and TREADLINED be your guarantee of quality.

Write for free Bulletin
L-52 "Corrosion Resistant
Lined Equipment."

TREADWELL

CONSTRUCTION CO.

PITTSBURGH • NEW YORK • CHICAGO
Main Office and Plant Midland, Pa.

When inquiring check CP 3721 on handy form, pgs. 2-3

MY CRYSTAL-GAZING PAID OFF WITH THIS CENTRIFUGAL

AN **A.T.&M.**
SUCCESS STORY BY
SAM SPINNER

I'M USING OVEN HEAT
AS WELL AS CENTRIFUGING
TO DRY THESE
CRYSTALS, SAM.
AND THAT OVEN
DRYING'S A REAL
BOTTLENECK!



OUR NEW **HIGH SPEED**
CENTRIFUGAL IS THE
JOB FOR YOU. ITS
FASTER BASKET
SPEED SPINS THE
CRYSTALS NEARLY DRY...
CUTS DOWN ON THE
OVEN'S WORK



LATER

WHAT A
DIFFERENCE! THAT
HIGH SPEED CENTRIFUGAL
REDUCES CRYSTAL
MOISTURE TO **1%**—
THE OLD ONE COULDN'T
DO BETTER THAN **6%**



MONEY? WE'LL
SAVE **\$30,000**
THIS YEAR ALONE!
I REALLY OWE IT
TO **AT&M**



FREE
ILLUSTRATED
BOOKLET

AMERICAN TOOL & MACHINE COMPANY
1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS.....

SAVE TIME, SPACE
AND COSTS WITH

A.T. and M.
CENTRIFUGING

Name.....Title.....
Company.....
Street.....
City.....Zone.....State.....

When inquiring check CP 3722 on handy form, pgs. 2-3

CONSTRUCTION

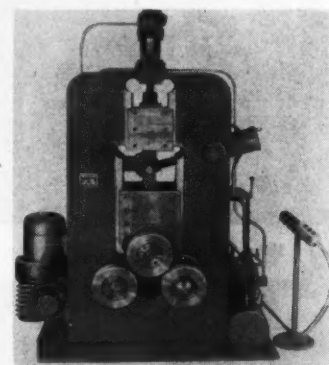
Fast action, repeat positioning with rolling machine

Uses: For rolling pipe, conduit,
or steel tubing.

Features: Unit has fast-action,
repeat positioning roll adjustment.
When initial setting of bending
roll is completed, re-indexing is ac-
curately controlled by hydraulically
actuated toggle mechanism. Having
once set bending roll to produce a
given radius, rolls may be raised
and lowered by hydraulic power
without disturbing initial setting.

Description: Machine is made
up of rolled steel plates and sec-
tions, electrically arc welded with
all welds stress-relieved. Frame
housing protects gears or chain
drive. Push-button controls are
mounted on pedestal stand con-
nected to machine with a flexible
steel cable. Maximum capacities—
depending on size of rolling ma-
chine — are: pipe or conduit IPS
1 1/4 to 3 1/2"; steel tubing 1-3/4 OD
to 4" OD.

A pitch roll attachment is placed
on fixed drive roll. Initial bend
may be started anywhere along
length of material. Pipe or tube
may be threaded on each end prior
to rolling. Short radius bends can



Re-indexing is accurately con-
trolled by toggle mechanism

be made in rigid material in one
pass through rolls. Limit switch
is provided to control height bend-
ing roll can be raised. Electric
motor is mounted on top of roll
bender to run vertical screw used
in raising or lowering bending roll.

(No. 490 Series rolling machine is
a product of Wallace Supplies Mfg.
Co., Dept. CP, 1300 Diversey
Pkwy., Chicago 14, Ill. . . . check
CP 3723 on form, pages 2 and 3.)

NEW COST-SAVING INFORMATION!



- for —
- Architects
 - Consulting Engineers
 - Contractors
 - Plant Engineers
 - Power Engineers
 - Building Managements

If you're concerned in any way with specifying,
selecting, installing, operating or maintaining
boilers for any kind of plant or building, you'll
want this new bulletin describing the latest cost-
saving features of

Powermaster®
PACKAGED AUTOMATIC BOILERS

Then compare *Powermaster*, feature by feature,
with any other packaged boiler and you'll see
why it's today's best buy in automatic steam
generation. For example, only *Powermaster*
now guarantees 83% minimum efficiency with
No. 6 oil! That means real fuel economy.

SEND FOR BULLETIN 1219 NOW...
on your company letterhead, telling us your
steam requirements and operating conditions.

ORR & SEMBOWER, INC.

960 Morgantown Road, Reading, Penna.

When inquiring check CP 3724 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Wide variety of continuous flame patterns made possible by design of line burner

Uses: Gas-fired retention-type line burner is for applications where heat must be distributed over a wide area by a continuous flame. It is said to be excellent for oven heating, kettle heating, and air heating installations, including make up air systems for spray booths.

Features: Each section is equipped with drilled and matched flanges, so they can be easily bolted together for a wide variety of continuous flame



Burners may be installed to fire in any direction

patterns. An adapter flange is available for applying either a blast or atmospheric pilot, and flame failure protective equipment.

Description: Line burners are of the blast burner design, which insures good combustion with rich, neutral, or lean mixture at all mixture pressures. Burners may be installed to fire in any direction: horizontally, vertically, or downward. They are made of cast iron sections with drilled ports and steel retention lips for flame stability.

(Product of Eclipse Fuel Engineering Co., Dept. CP, Rockford, Ill. . . or for more information check CP 3725 on handy form, pages 2 and 3.)

Resistance to extreme temperatures and to chemicals combined in gasketing material . . .

retains resilience and flexibility within range of -130°F to 392°F

Uses: As a gasketing material in the chemical, pharmaceutical, and aircraft industries. Because of its properties, it is expected that this material will find many applications by oven and autoclave manufacturers.

Features: Called Fluorlastic gaskets, they combine the chemical resistance of tetrafluoroethylene resin with the resilience and flexibility of silicone rubber. Their properties are said to be unaffected by temperatures ranging from -90°C (-130°F) to 200°C (392°F).

Description: Gaskets consist of long strips of foamed silicone rubber wrapped in sheets of Teflon. These are formed to permit edges of sheeted Teflon to extend laterally beyond one side of the silicone core. Edges are then heat-sealed to form and impenetrable envelope around the resilient core material.

(Fluorlastic gaskets are products of Joclin Mfg. Co., Dept. CP, 2964 Whitney Ave., Hamden, Conn. . . check CP 3726 on handy form, pages 2 and 3.)

B & W BULLETIN 6-F

Properties of Carbon, Alloy and Stainless Steel Tubing for High-Temperature and High-Pressure Service



The Story of the Croloys

New data contained in the seventh, revised edition of B&W's Technical Bulletin 6-F make it must reading for technical personnel concerned with the properties of tubing for high-temperature and high-pressure service. TB-6F contains up-to-the-minute information on:

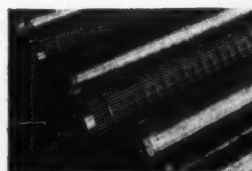
Requirements of Tubing for High-Temperature Service
Influence of Alloying Elements
Chemical Composition
Room-Temperature Properties
Short-Time Tensile Properties
Stress-Rupture
Creep
Thermal Expansion
Thermal Conductivity
Impact Properties
Microstructure—Transformation Temperatures
Air-Hardening Properties
Effect of Hydrogen
Common Causes of Tube Failures
Upset, Formed and Machined Tube-Ends

	B&W	NOMINAL ALLOY CONTENT	MAXIMUM SERVICE TEMPERATURE
	Carbon Steel (Killed)	—	1050F
	Carbon-Moly	0.50% Mo	1050F
On such grades as	Croloy 1/2	0.60% Cr 0.50% Mo	1075F
	Croloy 1 1/4	1.25% Cr 0.50% Mo	1100F
	Croloy 2	2% Cr 0.50% Mo	1150F
	Croloy 2 1/4	2.25% Cr 1.00% Mo	1175F
	Croloy 3-M	3% Cr 0.90% Mo	1175F

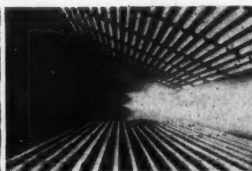
	B&W	NOMINAL ALLOY CONTENT	MAXIMUM SERVICE TEMPERATURE
	Croloy 5	5% Cr 0.50% Mo	1200F
	Croloy 5-Si	5% Cr 0.50% Mo 1.50% Si	1300F
	Croloy 7	7% Cr 0.50% Mo	1250F
	Croloy 9-M	9% Cr 1% Mo	1300F
	Croloy 16-13-3	16% Cr 13% Ni 3% Mo	1600F
	Croloy 18-8	18% Cr 8% Ni	1600F
	Croloy 25-20	25% Cr 20% Ni	2100F



Write for your copy
—on company letterhead, please.



Chemical

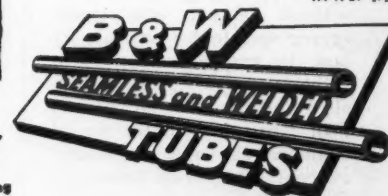


Oil



Power

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Bozover Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing



TA-1739 (P)

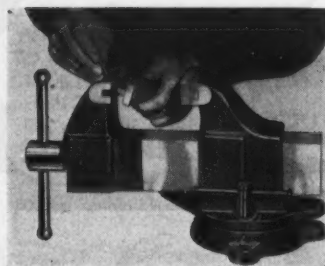
CONSTRUCTION

"Change of face" is easy with replaceable jaws on vise

Uses: Special vise jaw faces are for use on company's standard machinists' vises.

Features: Vises are manufactured with replaceable jaws which can be easily removed for installation of new faces or replacement of worn faces.

Description: Materials for jaw faces include smooth, hardened steel to protect soft objects and



It's easy to replace faces in vise

finished surfaces, and copper non-sparking, non-magnetic faces. Special faces designed and machined out to fit irregular shaped pieces are also available.

(Products of The Columbian Vise and Mfg. Co., Dept. CP, 9021 Bessemer Ave., Cleveland 4, Ohio . . . or for more information check CP 3727 on handy form, pages 2 and 3.)

Pictorial directions on floor patching

Large chart makes use of pictures to illustrate various operations in installation of iron-aggregate floor patches.

Typical of methods shown in pictorial directions that help save time and produce better results are these: 1) how to produce a long-wearing patch having a strong feather-edge without chipping and square-cutting area to be patched; 2) how to prepare a bond coat without using a separate material; 3) how to make an ordinary floor repair without the use of additional aggregate in patching material; 4) how to produce a dense patch without tamping; and 5) how to produce a patch

Distiller saves 4 ways

THE PROBLEM:

To find a pump capable of handling an extremely viscous, corrosive syrup to the fourth stage of a multiple-effect evaporator. The pump not only had to resist corrosion but abrasion as well — since the syrup contained up to 35% solids.

THE SOLUTION:

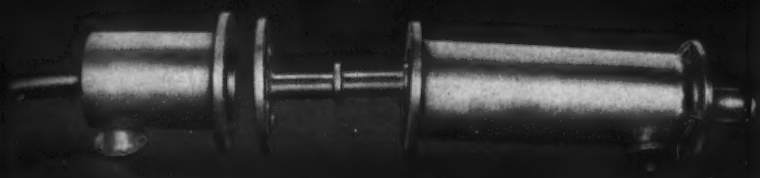
The installation of a compact, low-capital-investment Ampco Centrifugal Pump — the pump made of durable Ampco Aluminum Bronze Alloys that resist abrasion, corrosion, and cavitation-erosion — a special pump at a standard-pump price.

THE RESULTS:

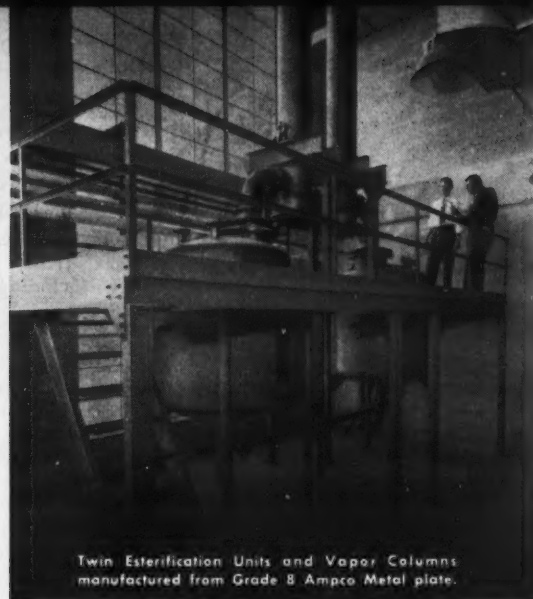
More than a year of day-in, day-out service proved the dependability and efficiency of Ampco Centrifugal Pumps.

The corrosion problem is solved. The pump shows practically no signs of wear — despite the high percentage of abrasive solids it handles. Power costs are $\frac{2}{3}$ less. Space savings are tremendous. And process efficiency is improved — shutdowns are infrequent, minimum cleaning is required, because the pump maintains a constant liquid level in the evaporator tubes.

Ampco Centrifugal Pump installed in Foods and Feeds Department, Joseph E. Seagram & Sons, Inc. Distillery, Lawrenceburg, Indiana.



Outside and internal sections of a 10" Barometric Condenser.



Twin Esterification Units and Vapor Columns manufactured from Grade 8 Ampco Metal plate.



Sulfuric acid sludge tank, made of Grade 8 Ampco Metal plate under construction at large Pacific Coast Refinery.

1. Uses 66% less power
2. Cuts space requirements
3. Improves process efficiency
4. Eliminates weekly pump maintenance

... with Ampco Centrifugal Pump made of **AMPCO* BRONZES**

—resistant to abrasion, corrosion and cavitation-erosion

Ampco engineered aluminum bronze alloys have high resistance to corrosion, erosion and abrasion.

That's why you find them used in both the process industries and marine service — used for tanks, pipe, fractionating towers, bubble caps, separators, condenser water boxes, agitators, stills, etc.—wherever there's a need for high resistance to these thieves of production time and money.

That's why Ampco Centrifugal Pumps save you money when the going is tough. They're the pumps made from Ampco — the pumps that resist the destructive action of corrosion, abrasion and cavitation-erosion.

Ampco aluminum bronzes make good where other metals fail. Perhaps they can help you. They're available in a wide variety of forms — sheet, plate, extrusions, pipe, tubes, fasteners, etc. They can be easily fabricated with Ampco-Trode* electrodes. Consult your nearest Ampco Field Engineer or write us for further information.

Tear out this coupon and mail today!

*Reg. U. S. Pat. Off. Ampco Metal, Inc.

Ampco Metal, Inc.

MILWAUKEE 46, WISCONSIN

West Coast Plant —

BURBANK, CALIFORNIA

AMPCO METAL, INC., Dept. CP-9, Milwaukee 46, Wis.

- ☐ Yes, I'm interested in Ampco Centrifugal Pumps. Send me literature.
- ☐ Send me information on the application of Ampco Aluminum Bronzes for corrosion-resistant service in the Process Industries.

Name.....Title.....

Company Name.....

Company Address.....

City.....(.....) State.....

CONSTRUCTION

that will resist softening and disintegrating action of grease and oil.

Form MQ-3 is issued by The Master Builders Co., Dept. CP, 7016 Euclid Ave., Cleveland 3, Ohio. When inquiring specify CP 3728 on handy form, pages 2 and 3.

Durability for roofing offered by silicone combination

Uses: Suitable for small roof repair jobs or for coating extensive roof areas.

Features: Material is said to combine silicones with long-fiber Canadian asbestos, imported asphalt, and non-evaporating waterproofing oils to produce a roof coating of unusual durability. It is reputed to saturate and preserve roofing felts, and remain elastic and water-proof longer. Other improved features are said to be greater resistance to oxidation caused by hot sun rays and industrial fumes, and freedom from checking, cracking, and sagging.

Description: Material is applied easily, without heating, and can be brushed or sprayed on surfaces



Features greater resistance to oxidation, freedom from checking, cracking, and sagging

of any size. It is available in 5-gal cans, 30-gal half drums, and 55-gal drums.

(Siliconed Rufferseal is a product of The Monroe Co., Inc., Dept. CP, 10703 Quebec Ave., Cleveland, Ohio . . . or for more information check CP 3729 on handy form, pages 2 and 3.)

For more information on product at left, specify CP 3730 . . . see information request blank between pages 2-3.

**HAVE YOU
EVALUATED**
Filtrol
**PRODUCTS
FOR OPTIMUM
RESULTS IN YOUR
CHEMICAL PROCESSES**

Filtrol *
CORPORATION

Chemical Division

**General Offices
727 WEST 7TH STREET
LOS ANGELES 17, CALIFORNIA**

*T.M. Reg. U.S. Pat. Off.

**The World's Largest Manufacturers of Catalysts, Adsorbents, Desiccants
and Other Chemically Treated Materials**

**WRITE TODAY
FOR YOUR COPY OF FILTROL'S
NEW BOOKLET DESCRIBING
CHEMICAL APPLICATIONS OF
FILTROL PRODUCTS.
COMPLETE TECHNICAL SERVICE
AT YOUR COMMAND.**

When inquiring check CP 3731 on handy form, pgs. 2-3

CONSTRUCTION

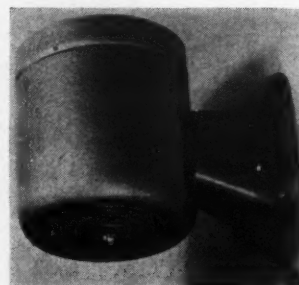
'Convection' vaporizing kills insects . . .

heated air flows through bed
of Lindane pellets

Uses: For eradication of all
insects. Kills over 200 insect
pests, including DDT resistant
flies.

Features: Vaporization occurs
at temperature far below melting
point of Lindane, preventing
vaporization in excess of one
gram every 24 hours per 15,000
cu ft of space. Automatic climatic
control decreases rate of vapor-
ization on colder days. Vaporizer
will not decompose Lindane into
toxic compounds, according to
manufacturer.

Description: Unit consists of
shallow perforated retaining cup.
Cup is supported on housing or
chimney which is perforated on



Vaporizer attached to wall

the bottom. Vaporizer is filled
with Lindane pellets, hung on
wall, and plugged into electric
outlet. Pellets are only available
from manufacturer. Micro-switch
on the control assures vaporization
to the specified 1 gm of Lindane
per 24 hours.

(Bug-Git Lindane Vaporizer is a
product of Lindavap Corp., Dept.
CP, Ann Arbor, Mich. . . . or for
more information check CP 3732
on handy form, pages 2 and 3.)

Centralized lube system built around pumping unit

Small, completely automatic cen-
tralized lubrication system built
around pumping unit is de-
scribed in 4-page, two-color
bulletin. Intended for use with
company's Dualine valves, unit
offers these advantages: accu-
rately metered amounts of lubri-

drills **6** inches of
concrete
per
minute

... gives lowest
cost per foot of
concrete drilled with a

tilden
ROTARY
KONKRETE KORE DRILL

Patented core
slot expels
cuttings
automatically

Drill
straight,
clean, ready
to use holes at
speeds up to 6 inches
per minute—even through
steel reinforced concrete

U.S. Pat. No.
Re. 23539

WRITE TODAY
for free,
illustrated
catalog.

TILDEN Rotary Concrete Core Drills
can be used with ordinary electric or
rotary air drill. Free Factory sharpening and
repair service still available on all Standard
TILDEN Drills from 3/16" to 8-inch diameters.
Interchangeable shanks for any depth hole.

TILDEN TOOL Manufacturing Company
209 Los Molinos • San Clemente, Calif.
Branch: 7111 North Glenwood, Chicago 26, Illinois

SOLD BY
SUPPLY
HOUSES
EVERY-
WHERE

When inquiring check CP 3733 on handy form, pgs. 2-3

J. E. SIRRINE CO.
GREENVILLE • SOUTH CAROLINA

Engineers
ESTABLISHED 1902

S
SIRRINE

PLANT DESIGN & SURVEYS • CHEMICAL • ELECTROCHEMICAL •
METALLURGICAL PRODUCTION • TRADE WASTE DISPOSAL •
WATER SUPPLY & TREATMENT • ANALYSES & REPORTS

When inquiring check CP 3734 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CONSTRUCTION

cant without waste or spillage; positive frequency control; increased safety; extended bearing life; and less down-time on machines.

Bul 39 is issued by The Farval Corp., Dept. CP, 3249 E. 80th St., Cleveland 4, Ohio. When inquiring specify CP 3735 on handy form, pages 2 and 3.

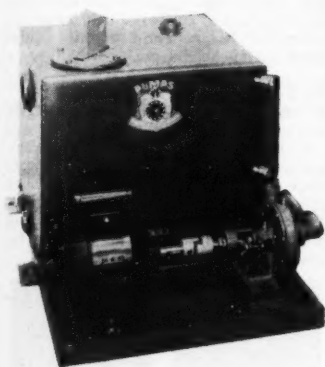
No pit required for condensate pump

Uses: As a condensate pump.

Features: According to manufacturer, unit does not require a pit even though return pipes are as low as a foot above the floor.

Description: Pump handles 8000 sq ft of radiation at 20 psi. It contains all bronze centrifugal and flexible couplings which isolate the pump from motor and piping, preventing misalignment, pipe cramp, wear, and noise.

Power is supplied by a 1/4-hp, 115-v, single-phase motor mounted on a drip-lip, heavy structural steel



Design prevents pipe cramp and misalignment

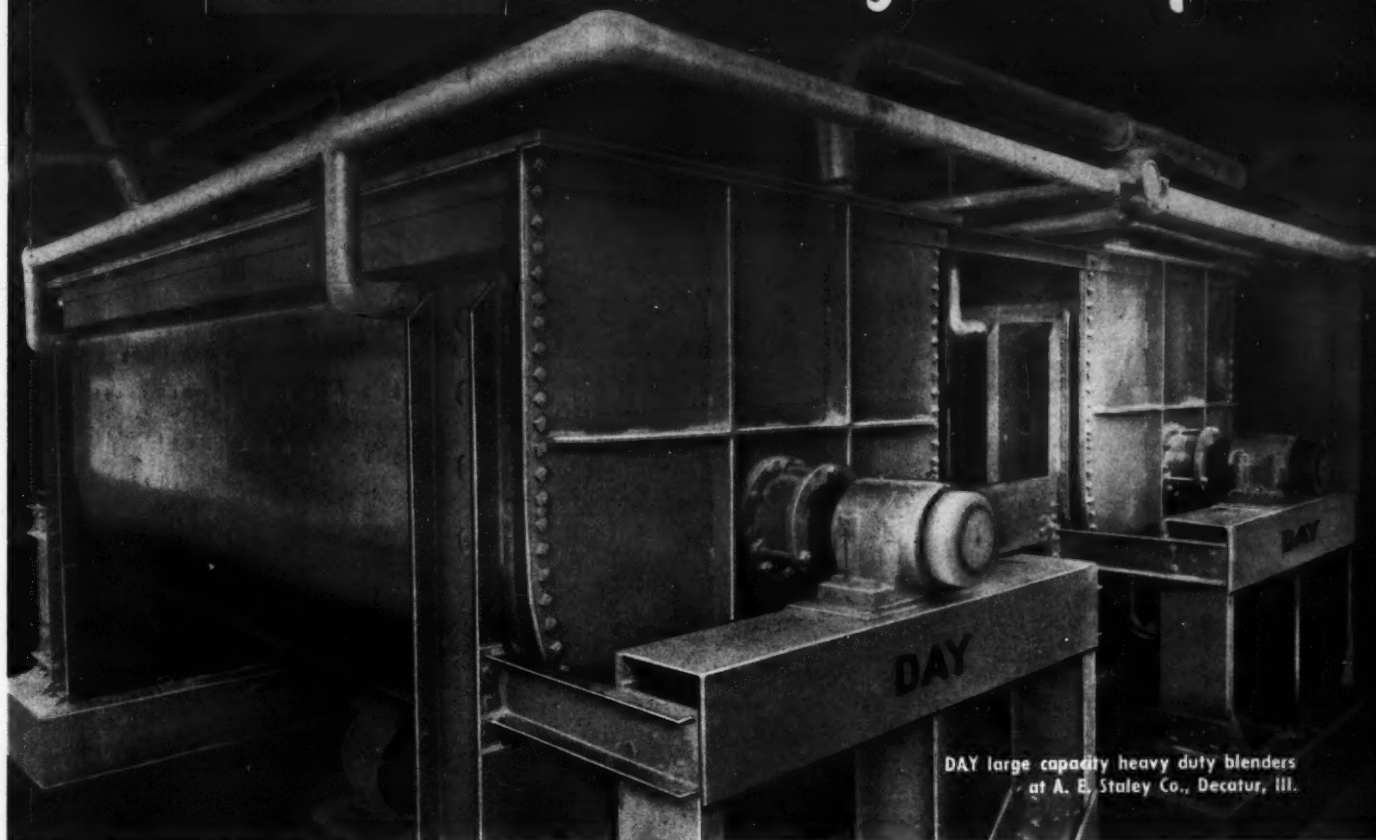
base with a 1/2 IPS drain. Unit has a large capacity safety factor providing for at least a 1 to 3 "on-off" operating cycle with tight traps.

(Product of Walter H. Eagan Co., Inc., Dept. CP, 2336 Fairmount Ave., Philadelphia 30, Pa. . . . or for more information check CP 3736 on handy form, pages 2 & 3.)

For more information on product at right, specify CP 3737 . . . see information request blank between pages 2-3.

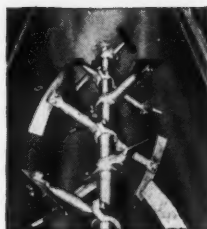


DAY means longer life span

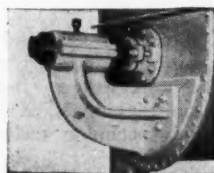


DAY large capacity heavy duty blenders at A. E. Staley Co., Decatur, Ill.

*Rugged construction plus precision engineering . . . that's the DAY combination that means extra years of trouble-free, economical operation. Plant after plant is finding this true. Whatever your special need, you'll find a DAY Heavy Duty Blender designed for you. Special DAY features on this Heavy Duty Blender have been developed to provide top performance and extra-long equipment



DRY COLOR AGITATOR



OUTBOARD BEARINGS

life span. The DAY dry color agitator is designed for heavy bodied powders. Other types of agitators are available to meet specific requirements. DAY large outboard bearing construction gives maxi-

mum shaft support, smooth operation. Exclusive stuffing box design prevents bearing damage from abrasive materials, and eliminates danger of product contamination by bearing lubricants. The DAY spiral ribbon agitator is designed for paste, semi-paste, granular or liquid products. For complete information or service, call your nearest J. H. Day field engineer or write for Bulletin 354-A.



SPIRAL RIBBON AGITATOR

FOUNDED 1887

DAY

when you buy

you buy dependability

THE J. H. DAY COMPANY

INCORPORATED

1141 HARRISON AVENUE • CINCINNATI 22, OHIO

PRODUCERS OF QUALITY EQUIPMENT FOR BAKING • PAINT & VARNISH • CHEMICAL FOOD • RUBBER • PHARMACEUTICAL • COSMETICS • PAPER & PULP • EXPLOSIVES CERAMICS • CANDY • SOAP • SUGAR • MILK PRODUCTS • OTHER MAJOR INDUSTRIES



Foster Reducing Valves, Relief Valves, Vacuum Breakers and Liquid Level Valves are available in all-stainless construction to resist corrosion and avoid contamination.

All valve parts in contact with fluids may be had in a wide range of corrosion resisting alloys.

For corrosion resistant, non-contaminating service, plus the usual Foster dependability and maintenance-free performance, it will pay you to tell your Foster Representative your requirements.



PRESSURE REGULATORS • RELIEF AND BACK PRESSURE VALVES • CUSHION CHECK VALVES • FAN ENGINE REGULATORS • PUMP GOVERNORS • TEMPERATURE REGULATORS • FLOAT AND LEVER BALANCED VALVES • NON-RETURN VALVES • VACUUM REGULATORS OR BREAKERS • STRAINERS • SIRENS • SAFETY VALVES • FLOW TUBES

FOSTER ENGINEERING COMPANY • UNION, N. J.

When inquiring check CP 3738 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Without alterations, many jobs performed by package water conditioning plant . . .

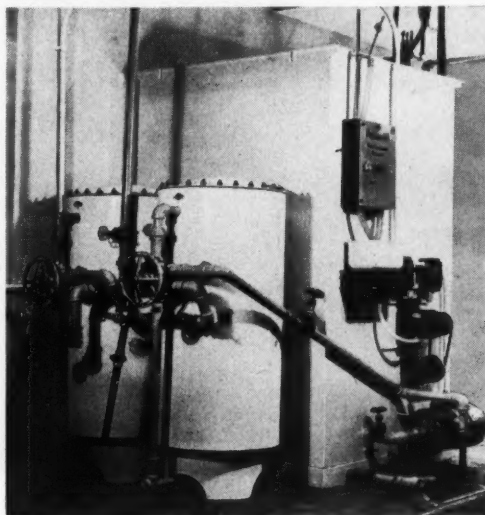
clarifies, chlorinates, neutralizes, softens, etc

Uses: For water conditioning applications in many types of industry.

Features: These package units, without alterations, may be used: 1) to remove turbidity, color, and organic matter from water supplies; 2) to chlorinate; 3) to remove bad tastes and odors; 4) to remove iron and manganese; 5) to neutralize; 6) to soften; and 7) to de-alkalize.

Description: Plant, as a complete package, forms an extremely versatile and self-contained unit which is available in eight standard sizes ranging from 500 to 3300 gph and flows of 12,000 to 79,200 gal per 24 hr. Larger capacities can be furnished on request.

Each complete water conditioner consists of a precipitator with a built-in clearwell, a proportioning chemical feeder control, a coagulant feeder tank, a



Available in eight standard sizes

lime or soda ash and hypochlorite feeder tank, an inlet float control valve, Neutralite filter unit(s), Carbo-Dur purifier unit(s), and a service pump.

(Product of The Permutit Co., Dept. CP, 330 W. 42nd St., New York 36, N. Y. . . . or for more information check CP 3739 on handy form, pages 2 and 3.)

Removal of enamels and resins is rapid with powerful paint stripper

Used for quick removal of organic resin and pigmented coatings from steel, zinc, and magnesium alloy production parts and work hangers, material was especially developed for stripping baked enamels, varnishes, and lacquers containing melamine,

**FOR MEN
WHO USE
WIRE MESH BELTS!**

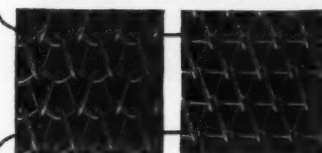
HERE'S WHY LEADING MANUFACTURERS SPECIFY "CAMBRIDGE" WIRE MESH CONVEYOR BELTS.

ACCURATE CONSTRUCTION—every step of the construction of your belt is carefully controlled so that the finished belt meets specifications for size, mesh count and mesh opening. Even the welds at the edge of the belt are specially inspected to give you maximum protection at this most vulnerable part of the belt.

RANGE OF SPECIFICATIONS—whether you're handling delicate light-weight loads, such as synthetic fibres, or heavy, bulky loads such as bagged cement, there's a Cambridge wire belt specification to meet your needs. Even processing through heat, cold or corrosive solutions is a snap when the proper metal or alloy is chosen for fabricating your belt.

EXPERIENCED ENGINEERING SERVICE—the combination of trained engineers both in the Cambridge plant and on our Sales Staff is your assurance that the belt recommended for you is the right belt. Cambridge engineers can assist you in any phase of conveyor belt usage . . . conveyor design, plant layout, equipment specifications, etc.

P. S.
IF YOU DON'T USE WIRE MESH BELTS, you'll do well to find out how they can cut costs and boost output by combining product movement with processing in your plant. For information write direct or call in your Cambridge field engineer. Look under "Belting-Mechanical" in your classified telephone directory for the Cambridge man nearest you.



Typical Cambridge Belt Weaves, Balanced and Rod-Reinforced, are widely used for many processes which can be combined with movement. Other Weaves available.

FREE WIRE BELT MANUAL
Gives data on design, installations, construction. Write for your copy now.



The Cambridge Wire Cloth Co.
Dept. F • Cambridge 9, Md.

WIRE CLOTH • METAL CONVEYOR BELTS • SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check CP 3740 on handy form, pgs. 2-3

CHEMICAL PROCESSING

alkyd, methacrylate, polyamide, ureaformaldehyde, and Epon resins.

Applied in steel tank baths, a concentration of 25 to 100% of paint stripper may be used at temperatures from 100°F to 225°F. Parts will rinse clean by spraying. Non-flammable and non-volatile, material is available in five grades for special use with various coatings and metals.

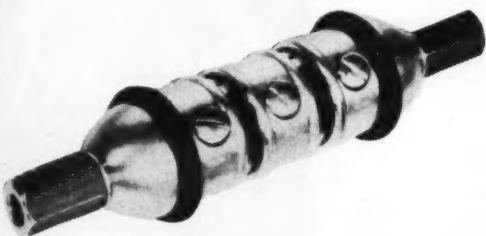
(Alk-A-Sol is a product of Dept. 4-B, Whitfield Chemical Co., Dept. CP, 14225 Schaefer Hwy., Detroit 27, Mich. . . . or for more information check CP 3741 on handy Reader Service slip between pages two and three.)

Pneumatic tools automatically lubricated with "oiled air" by unit which filters line

Uses: For filtering air lines and lubricating pneumatic tools.

Features: Device, attached to standard air line, automatically filters air and lubricates pneumatic tools with "oiled air". It also features light weight (12-oz) Neoprene shock-absorber O-ring mountings to permit unit to be dragged with hose without damage. Non-breakable, clear-vision window shows at a glance when oil in lubricator element needs replenishing. Any good oil up to SAE 30 may be used with unit.

Description: Basically constructed of aluminum, this lubricator has no moving working parts. Oil flow, however, can be increased or decreased to desired requirements by a simple needle point adjustment. Air by-passes feeder outlet so line does not



Neoprene shock-absorber O-rings permit unit to be dragged with hose without damage

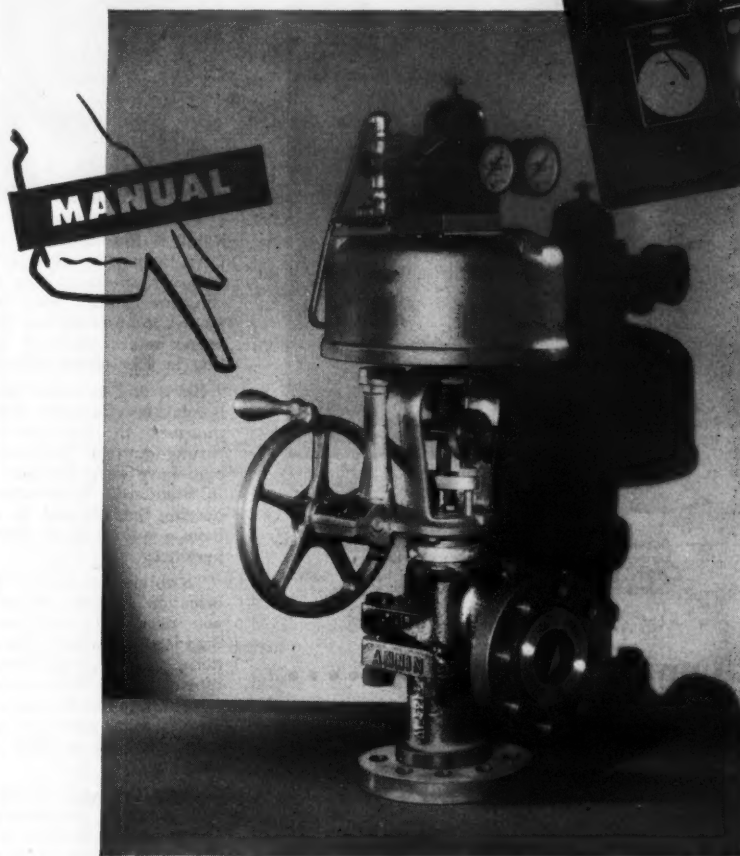
have to be shut down to refill. Filter section may be cleared by removing a plug, turning on air and blowing out dirt, scale, water, rubber particles, and other tool-damaging accumulations.

Device can be supplied without filter element, otherwise being identical. Fittings are adaptable to all standard size air lines. Lubricator may also be used on a stationary machine line.

(Williams Pneumatic Lubricator is a product of Air Speed Tool Co., Dept. CP, 1502 W. Slauson Ave., Los Angeles 47, Calif. . . . or for more information check CP 3742 on handy Reader Service slip between pages 2 and 3.)

VERSATILITY *Plus!*

COMBINATION OF AUTOMATIC-MANUAL OPERATION INCREASES FLEXIBILITY OF ANNIN VALVES...



Model 1560 SMW



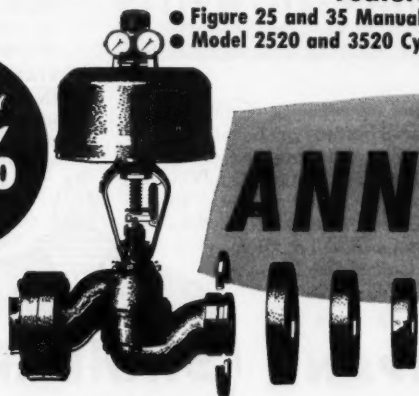
To ANNIN's powerful Domotor automatic operation add the versatility of a side-mounted Handwheel. This combination provides the answer to field demands for convenient and positive *supplementary* control during start-up periods, or when the system is shut down temporarily for instrument repair. The Handwheel can act to operate the valve manually and provides an adjustable limit stop in either the opening or closing direction. This auxiliary manual control is particularly advantageous in adjusting the minimum or maximum flow of steam to turbines, steam engines and other process equipment. Further evidence of the increased utilization, simplicity of design and greater economy of ANNIN VALVES.

See DOUG ANNIN
in booths 188 & 189
at the I.S.A. show
Chicago, Sept. 21-25

Featuring these NEW Annin products:

- Figure 25 and 35 Manual Valves
- Model 2560 and 3560 Domotor Valves
- Model 2520 and 3520 Cylinder Valves
- Model 5060 Wee Willie Control Valves

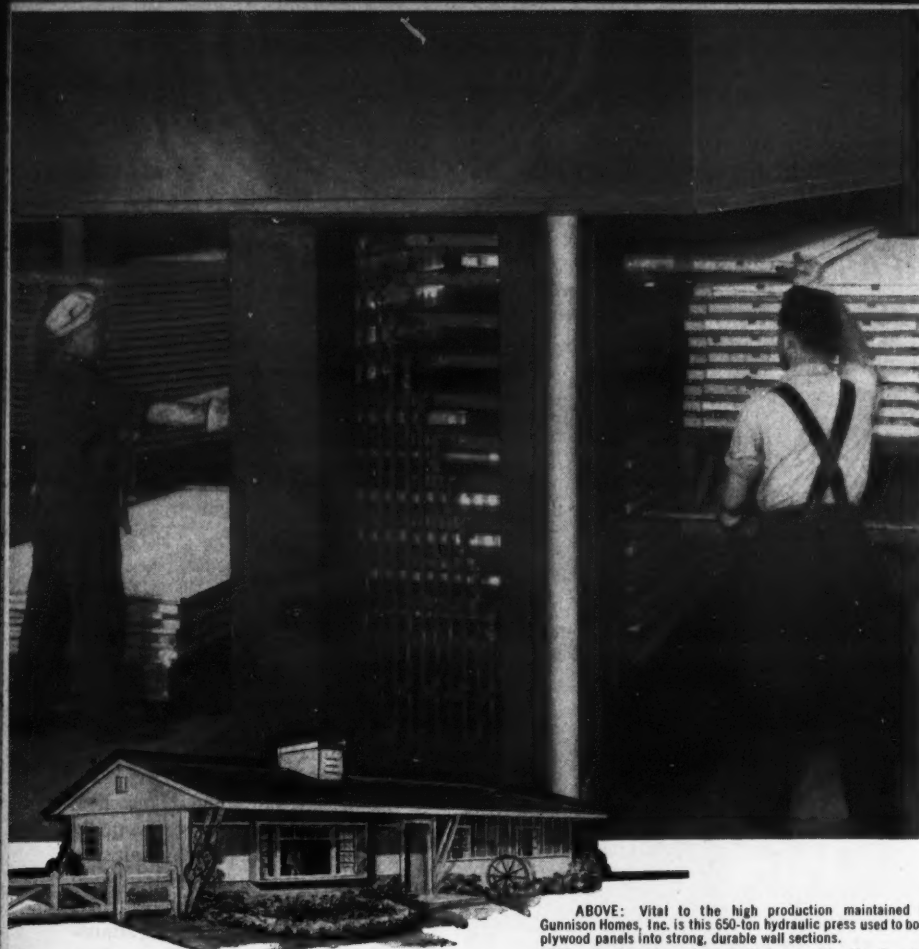
CUT
INVENTORY
50%
WITH



ANNIN Control VALVES

THE ANNIN COMPANY 3500 Union Pacific Avenue
Los Angeles 23, California

When inquiring check CP 3743 on handy form, pgs. 2-3



ABOVE: Vital to the high production maintained by Gunnison Homes, Inc. is this 650-ton hydraulic press used to bond plywood panels into strong, durable wall sections.
LEFT: Handsome, precision built homes, like the Gunnison Coronado pictured here, are built in a matter of hours.

Answers a pressing need for Gunnison Homes, Inc....

● Gunnison Homes, Inc., situated in New Albany, Indiana, is one of the leaders in the field of manufactured homes. Key to continuous production of precision built homes at the New Albany plant is the 650-ton hydraulic press, shown above, which was installed in 1947. This press processes ten plywood panels every cycle by the combination of heat and pressure... a tough job and one requiring reliable hydraulic performance to maintain production schedules.

STANOIL Industrial Oil was installed in the press when it was put into operation six years ago. STANOIL has stood the test of severe operation... with no evidence of oil deterioration being found during a recent inspection of the hydraulic system. Operation has been efficient. Minimum make-up oil has been needed to

maintain the oil capacity of 450 gallons. Find how STANOIL can benefit you by discussing this multi-purpose oil with a Standard lubrication specialist. You can contact him by phoning your local Standard Oil office. Or, write: Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.



STANDARD OIL COMPANY



(Indiana)

What's YOUR problem?



Ralph E. Murnahan, of Standard Oil's Evansville office, is the lubrication specialist who keeps in constant contact with Gunnison Homes to make certain that there is no interruption of operation due to lubrication difficulties.

He is one of many lubrication specialists who make their headquarters in Standard's offices throughout the Midwest. These men have been specially trained in Standard's Lubrication Engineering Schools and, in addition, have a wealth of on-the-job experience.

To obtain the service of the lubrication specialist in your area, you need only call your local Standard Oil office. The lubrication specialist will discuss your lubrication problems with you... at no obligation to you, of course. He has a complete line of petroleum products to offer you, including:

SUPERLA Greases—Available in a wide range of consistency grades and in both lime-soap and soda-soap types. SUPERLA Greases cover a wide range of operations. These efficient products are comparable in quality with the highest type of special greases.

STANOLITH Greases—Because these unique lithium soap products possess the heat resistant properties of soda-soap greases and the water resistant properties of lime-soap greases, they offer a solution to lubrication problems caused by the presence of both heat and water.

CONSTRUCTION

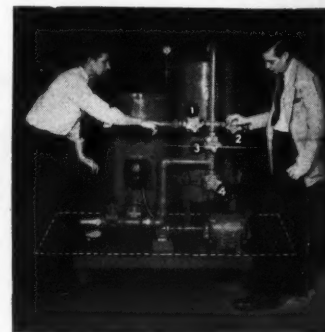
Space is saved by redesigning of filter unit

Uses: Filters are used in the food, drug, and chemical process industries or almost everywhere that filtration is required.

Features: Line of filters has been redesigned to reduce to a considerable extent the amount of floor space required. As an example, filter illustrated is 4' long by 3' wide, as compared to 5'10" by 2'9" for the model which it replaces—or 12 sq ft compared to 16 sq ft. In larger models, space savings are said to be even more significant.

Improvements have also been reported in the location of control valves, motor, and pump. As shown in photo, control valves have been grouped in front of filter at a height which makes them readily accessible to any workman. Motor and pump are placed in front of precoat tank and filter chamber, simplifying any maintenance required.

Description: Essential components of all-purpose filters are: 1) filter chamber, 2) precoat tank, 3) motor, and 4) pump. Filtration is accomplished in three cycles. In precoating cycle, filter-aid is mixed



Dotted line shows space required by former filter. Numbered items are convenient valves

with clear liquid in precoat tank, and mixture is pumped into filter chamber where filter-aid deposits on outside of 2 in diameter porous tubular membranes suspended vertically in chamber. Clear liquid is returned to precoat tank. Precoat-

For more information on product at left, specify CP 3744... see information request blank between pages 2-3.



A MARIETTA concrete stove silo is the key to an efficient materials-handling installation. These systems are engineered and erected to improve handling facilities and to lower operating costs. There's no limit to the capacity or to the materials-handling equipment that can be incorporated into the walls, floor or roof of a MARIETTA silo. For complete data and construction details, write for Bulletin 4393.

the Marietta Concrete corp.

MARIETTA, OHIO
Branch Offices: 501 Fifth Avenue, New York
17, N. Y. • Pulaski Hwy. at Rose Rd.
Baltimore 21, Md. • 805 Bessemer Bldg.,
Pittsburgh 22, Pa. • Hollywood, Fla.

When inquiring check CP 3745 on handy form, pgs. 2-3

ENGINEERING FIRMS SAY "IDEAL FOR OUR JOB or OFFICE NEEDS"



MORE AND MORE BUSINESSMEN USE . . . WHEELER SOUND POWERED Electric TELEPHONES

- NO BATTERIES. No outside power.
- LOW in FIRST and LAST COST.
- ALWAYS READY IN EMERGENCY.
- UP TO 12 stations intercom.
- Corrosion-resistant construction.

ASK ABOUT NEW EXECUTIVE-TYPE CRADLE PHONE.
THE **WHEELER** INSULATED WIRE CO., INC.
Division of The Sperry Corporation
1112 EAST AURORA STREET • WATERBURY 20, CONNECTICUT

When inquiring check CP 3746 on handy form, pgs. 2-3

SEPTEMBER, 1953

CONSTRUCTION

ing is said to require only a few minutes and is complete when liquid in precoat tank is devoid of filter aid.

In filtering operation, unfiltered solution is pumped into filter chamber where sediment is deposited on a layer of filter-aid and clear filtrate is discharged from outlet. All suspended particles down to 1/10 of a micron are removed without affecting taste, smell, color, or chemical composition of liquid.

Final operation — cleaning — is accomplished by backwashing or reversing flow of liquid through membranes. Flow of water under pressure from inside of membrane knocks cake of filter-aid and sediment from outside surface of membrane. Cleaning of average filter takes a few minutes, with no dismantling of equipment required, according to manufacturer.

Standard models are available with capacity on water from 300 to 10,000 gph, and larger filters can be built to satisfy the customer's requirements.

(Product of Titeflex, Inc., Dept. CP, 500 Frelinghuysen Ave., Newark 5, N. J. . . . or for more information check CP 3747 on handy Reader Service slip between pages two and three.)

Prevents O₂ corrosion in pipe lines

Self-molding packing sealing compound, which carries molybdenum sulfide as non-oxidizing dry lubricant, is described in 2-page bulletin. Said to arrest and prevent oxygen corrosion in pipe lines, compound is furnished in soft extruded "Plas-ticks" in various diameters, and can be used for steam, water, or compressed air applications in valves, expansion joints, pumps and related equipment.

According to manufacturer, compound will seal despite sustained vibration, and prevents heat losses. Bulletin includes recommended operating ceiling loads and a table showing steam loss for various leak sizes.

Bulletin on Molyseal is issued by Surveys, Inc., Dept. CP, 219 Euclid Ave., Trenton 9, N. J. When inquiring specify CP 3748 on handy Reader Service slip between pages 2 and 3.

A NEW PUMP TO DISPENSE FLUIDS FROM DRUMS

Get this NEW
IDEA BOOK!



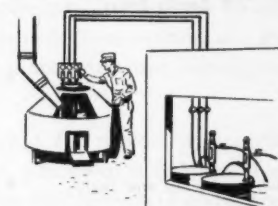
● This illustrated, quick-reading, 24-page book tells you how other users are finding unusual applications for the Fast-Flo pump . . . where and how you can save time and cut costs pumping fluids from original drums with Graco's amazing Fast-Flo Drum Pump. If your plant deals with fluids, it will pay you to send for your own free copy now!



Filling Product Containers from Original Drums with Fast-Flo is fast and simple. Pump delivers exact desired volume of practically any fluid.



Fast, Clean, Safe Fluid Handling from upright drums is a Fast-Flo specialty. Save space, spillage and hazardous transferring. No more "drippy" spigots!



Pumping fluids to point-of-use with the versatile Fast-Flo saves time. Handy supply outlets increase shop efficiency, and drums can be kept away from working area.

Look around your plant—if you see drums,
you should save money with Fast-Flo

If you handle fluids or semi-fluids from drums, the new Fast-Flo drum pump can help you do a faster, cheaper, cleaner job—whether it's transfer, supply, or a simple mixing operation. Send now for your free copy of the Fast-Flo idea book.



GRACO

Fast-Flo DRUM PUMP

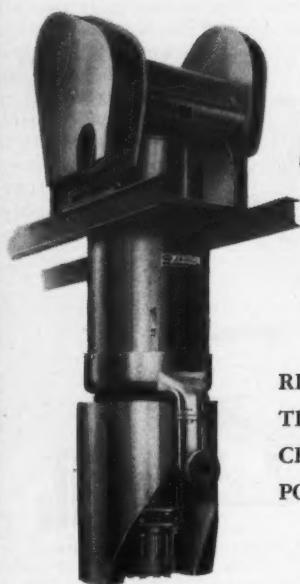
GRAY COMPANY, INC.

92 Graco Square • Minneapolis 13, Minnesota

Regional Offices: New York, Philadelphia, Detroit, Atlanta, Chicago, San Francisco

When inquiring check CP 3749 on handy form, pgs. 2-3

viscose processing . . . and Jackson & Church pulp presses



medium size
J-C Zenith Press

J-C PULP PRESS

**for constant press ratio
for superior filterability
for exceptional uniformity**

RESULTS OF FULL-SCALE PRODUCTION TESTS IN PRESSING ALKALI-CELLULOSE DISCLOSED THESE IMPORTANT FACTS:

- *Maintains a constant press ratio.* Where a ratio of 2.75 to 1 is desired, the variation is less than ± 0.02 .
- *Uniform xanthation* resulted in complete solution and marked improvement in filterability.
- *Exceptional product uniformity* has been proven by analyses of the cake delivered by the press in an annular ring.
- *Capacity up to 1000 pounds per hour*, based on dry weight of alpha pulp.

J-C engineers and facilities are available for consultation and assistance in developmental work. See what the production-tested J-C Zenith pulp presses can do.

High pressing efficiency of the J-C Pulp Press is obtained by an arrangement of ingeniously-constructed flights on a tapered, screw-type spindle. The slurry is prevented from rotating with the spindle by means of retarding resistors. Constant pressure on the slurry is maintained by the fully automatic "Floating Cone", exclusive with J-C Presses.

J-C Pulp Presses are also stepping up profits in such other fields as paper plants, canneries, corn starch plants, potato starch plants, rubber reclaiming plants and glue plants.

J-C

JACKSON & CHURCH CO. Saginaw, Michigan

Work well done since '81

When inquiring check CP 3750 on handy form, pgs. 2-3

CONSTRUCTION

**Soft blue color featured
by versatile, soluble
coolant-lubricant**

Uses: As a coolant-lubricant for practically all types of metal cutting, grinding, and forming operations.

Features: Coolant has a soft pastel blue color which minimizes eye strain of machine operator, eliminating harsh glare which interferes with precision work on long production runs. Oil retains its color in machine, but is easily washed from hands or clothing.

Description: Oil is a multi-viscosity blend which enables it to handle the maximum range of speeds, feeds, and materials, according to manufacturer.

It is reported that no rancidity or objectionable odor develops from coolant over long periods of use. A special additive protects operator's hands against causes of dermatitis. Oil concentrate pours at low temperatures and forms a stable emulsion when mixed with water in any proportion.

Oil is said to leave no heavy film residue on parts. It is anti-foaming and non-smoking under ordinary operating conditions. Use of lubricant is said to improve the finish on metal parts and inhibit rusting of ferrous metals even in dilute solutions of 200 to 1.

Dilutions of 10/1 to 40/1 are recommended for most machining operations, with heavier operations such as deep cuts and rough broaching using lowest ratios. Operations requiring normal cuts use dilutions of about 20/1. Most grinding operations are performed with higher dilutions up to 80/1, manufacturer reports.

(Product of Michigan Tool Co., Shear-Speed Chemical Products Div., Dept. CP, 7125 E. McNichols Rd., Detroit 12, Mich. . . or for more information check CP 3751 on handy form, pages 2 and 3.)

**Small and streamlined
flux scaling hammer
weighs but 2 1/8 lb**

Uses: For removing flux and splatter after welding. Other applications include paint scraping, rust removal, wood chiseling, small casting sand removal, etc.

2 of the 5 Neff & Fry Silos at Detroit Stoker Co.

These two 20' x 55' Neff & Fry Silos are used for handling coal at the Detroit Stoker Company's Monroe, Mich., plant. Three others, each 14' x 40', are used for handling foundry sand. As usual, we collaborated with the machinery manufacturers in designing the conveying equipment.

If everyone understood the advantages of Neff & Fry Silos, several other types of bins for handling flowable bulk materials would not be purchased. As a hint, we point out a few facts: 1. The walls of our silos are only 2 1/2" thick, making the interior capacity relatively great in relation to outside diameter; 2. Our silos do not spall, rust, rot, or burn; 3. Our silos have such vertical strength that heavy machinery is mounted on them without extra supports.

The why's are explained in our folder, "Bins With the Strength of Pillars." Read it. A copy will be sent upon request.

THE NEFF & FRY CO. • 166 Elm St. • Camden, Ohio

NEFF & FRY ➔ **SUPER-CONCRETE STAVE
STORAGE BINS**

When inquiring check CP 3752 on handy form, pgs. 2-3

NEW JET MODEL ALL-METAL ELECTRIC SPRAY GUN

**No Compressor
Needed!**

**No Cartridges—
Just Plug in
& Use**

**ENTIRE UNIT
UL APPROVED**



Here is the new trigger-action, lightweight, yet built for heavy duty, all-metal electric Spray Gun ideal for a wide-range of industrial uses. Suitable for all types of work including painting, refinishing, touch-up work, cover-up coats, rustproofing, stenciling, marking, etc. Delivers over 90 lbs. of pressure at 7,200 strokes per minute. No compressor is needed. Just plug into AC outlet and use. This Spray Gun is self-contained and has sturdy vibrator motor in the handle. The entire unit, every part, is fully UL approved, including the 8-ft. S. J. Neoprene Cord & Plug Set. Also included: 25-oz. polished aluminum container, and 5 extra nozzle discs. This Jet model Spray Gun is available only from us. Only \$19.95 postpaid. All Chrome-Plated, \$24.95.

10-Day Money-Back Guarantee

WALDORF SALES CO.

Dept. PG-3809, 363 Central Park Ave., Yonkers, N. Y.

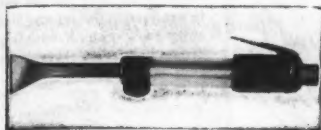
When inquiring check CP 3753 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CONSTRUCTION

Features: Small, streamlined unit is only 7-3/4" long and weighs but 2-1/8 lb.

Description: This weld flux scaling hammer is said to be especially handy for corner welds and one-hand operation where space is a factor. Exhaust air,



Air-operated hammer is 7 3/4" long

from this air-operated unit, blown from four holes in front of barrel toward work, removes loose chips and scale to maintain sufficient visibility.

The three models available are Size 5L with lever throttle; Size 5P with push throttle; and Size 5B with button throttle. Straight, angle, or mortar chisels may be used.

(Product of Thor Power Tool Co., Dept. CP, Aurora, Ill. . . . or for more information check CP 3754 on handy Reader Service slip, pages two and three.)

Stress rupture values of steels tabulated

Technical data card presents stress rupture information on a number of company's Croloy tubing steels and other materials designed for high temperature service. Test, briefly explained on card, is in essence an overloaded creep test which is continued to actual failure of the specimen.

Data developed by these tests is said to offer an important means of evaluating characteristics of metals for operation under stress at high temperature over long periods of time.

Data Card TDC-153 is issued by The Babcock & Wilcox Co., Tubular Products Div., Dept. CP, Beaver Falls, Pa. When inquiring specify CP 3755 on handy form, pages 2 and 3.

For more information on product at right, specify CP 3756
see information request blank between pages 2-3.



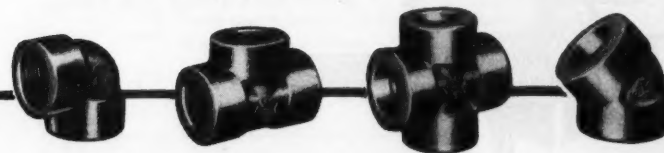
STOP COSTLY PIPE-LINE FAILURES

No one knows better than you the increasingly high cost of unscheduled outages due to pipe-joint failures. But do you know just how far it is possible to go toward *eliminating* such failures throughout the life of your piping systems? The answer to this critical problem in production and maintenance costs is **FORGED STEEL FITTINGS** by the pioneer firm of Watson-Stillman—consultants and suppliers to *all* major industries concerned with pipe joining and maintenance.

Watson-Stillman fittings are **FORGED** for maximum strength, toughness, and resistance to corrosion, vibration, and shock. More uniformly precise in all dimensions, they are the modern go-between wherever pipes meet permanently.

Leading Refineries, Chemical Plants, Public Utilities, Refrigeration and Industrial Plants throughout the world stay on stream at lowest cost-per-year with the famous Double-Diamond Fittings by Watson-Stillman. Write for literature.

Screw-End and Socket-Weld Types
SOLD THROUGH LEADING DISTRIBUTORS

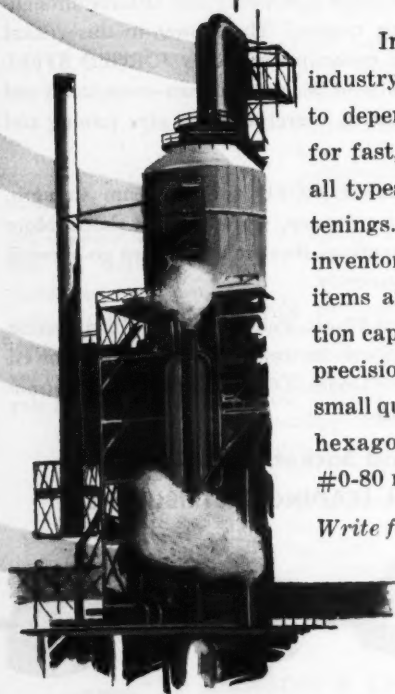


WATSON-STILLMAN FITTINGS DIVISION

H. K. PORTER COMPANY, INC.

131 ALDENE RD., ROSELLE, NEW JERSEY

first
in
stainless
steel
fastenings



anti-corrosive metal products co., inc.
castleton-on-hudson, new york

In the **CHEMICAL** industry, buyers have learned to depend on **ANTI-CORROSIVE** for fast, dependable service on all types of stainless steel fastenings. Draw on our **IN STOCK** inventory of more than 7,000 items and sizes and a production capacity geared to produce precision fastenings in large or small quantities, from huge 7/8" hexagon head bolts to tiny #0-80 machine screw nuts.

Write for Catalog 53E today.

When inquiring check CP 3757 on handy form, pgs. 2-3

CONSTRUCTION

Scratch-resistant surface supplied by plastic fan grilles . . .

smooth, attractive finish is easily cleaned

A hard, scratch-resistant, glossy surface is furnished on Aeropel Ventilator fan grilles by making them from plastic. The grilles are molded in color on a conventional compression type hydraulic press. Plastic used is said to have excellent dimensional stability.

Metal stampings, the material most commonly used in the past for this application, have several disadvantages. Such stampings usually have sharp angles and recesses which tend to retain grease. Then too, sectional metal grilles are difficult to clean. Unless they are chrome plated or made from special metals, they have a tendency to corrode.

Plastic grilles resist corrosion, are smooth in finish, attractive in design, and are easy to keep clean. They are 12" square in size and weigh approximately three pounds.

(Michigan Molded Plastics, Dexter, Mich. and General Electric Co., Fort Wayne, Ind. mold the plastic grilles for American Blower Corp., Detroit, Mich. Beetle plastic utilized is product of American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 3758 on handy Reader Service slip, pages 2 and 3.)

Isolates vibration in connecting lines

Flexible metal hose development used to isolate vibration from connecting suction and discharge lines to refrigeration and air conditioning machinery, pumps, and turbines, is described in two-page, 2-color bulletin. Hoses, called Vibra-Sorbers, are supplied with copper tube ends, straight or bent, in inner diameters to fit standard OD copper tube sizes in rigid piping. Bulletin illustrates typical applications.

Bul V/S is issued by Flexonics Corp., Dept. CP, 1319 S. Third Ave., Maywood, Ill. When inquiring specify CP 3759 on handy Reader Service slip, pages 2 and 3.

Famous Holes

H & K Perforated Holes



The Port Hole—it frames the smiles of those who are enjoying the delights of life on shipboard. And, many a smile has likewise been produced by H & K Precision Perforated Holes when they put an end to production delays and high costs in screening, grading, separating and other industrial applications.

Our more than 70 years experience permits us to satisfy your most difficult requirements with precision perforating of thousands of hole sizes, shapes and patterns—in all the metals; including hard to perforate stainless steel and Monel; in hardboard, plastics and other materials which come in plates, sheets or coils.

If it can be perforated—H & K can perforate it!

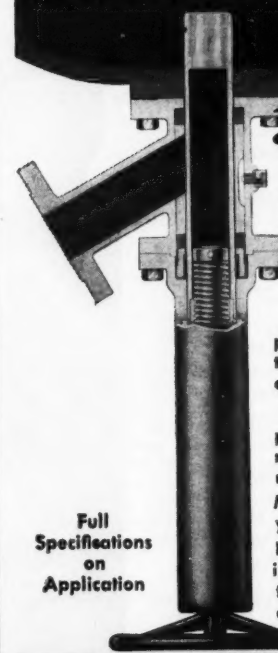


Harrington & King
PERFORATING CO.

5636 Fillmore Street, Chicago 44, Ill.
114 Liberty Street, New York 6, N. Y.

When inquiring check CP 3760 on handy form, pgs. 2-3

NO RODDING NECESSARY!



Strahman
RAM TYPE
Drain Valves

The Only Drain Valve
That Cannot Clog Up!

In the closed position the piston or ram extends up into the tank, preventing plugging of the outlet.

In the open position with piston fully retracted, there is no resistance to flow of materials drained from the tank.

Made in any cast metal to meet your requirements.

Designed for bolting to existing flanges. For special adaptations and for jacketed vessels, adaptor pads are available.

Full
Specifications
on
Application

STRAHMAN VALVES, INC. 16 HUDSON STREET
NEW YORK 13, U.S.A.

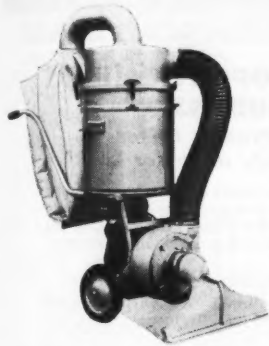
When inquiring check CP 3761 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Unit collects dust and trash
in large areas at speeds
to 20,000 sq ft per hr**

Uses: For high speed, effective collecting of dust, powder, and ordinary traffic litter from factory and warehouse floors.

Features: Machine will clean a 22" path at speeds up to 20,000 sq ft per hr.



Combines speed of mechanical sweeper with effectiveness of vacuum cleaner

Description: Floormobile has a large suction nozzle mounted in a fixed position just above floor surface. Wide orifice (31.4 sq in) permits collection of large pieces of scrap and litter without clogging. Unit is available with gasoline or electric power capable of moving 860 cubic ft of air per minute.

(Plantman Floormobile is a product of

Handling Devices Co., Inc., Dept. CP, 43-45 Pearl St., Brookline 46, Mass. . . . check CP 3762 on handy form, pages 2 and 3.)

**Long lasting resistance to oil
reported for coating . . .**

also withstands action of acids and alkalis

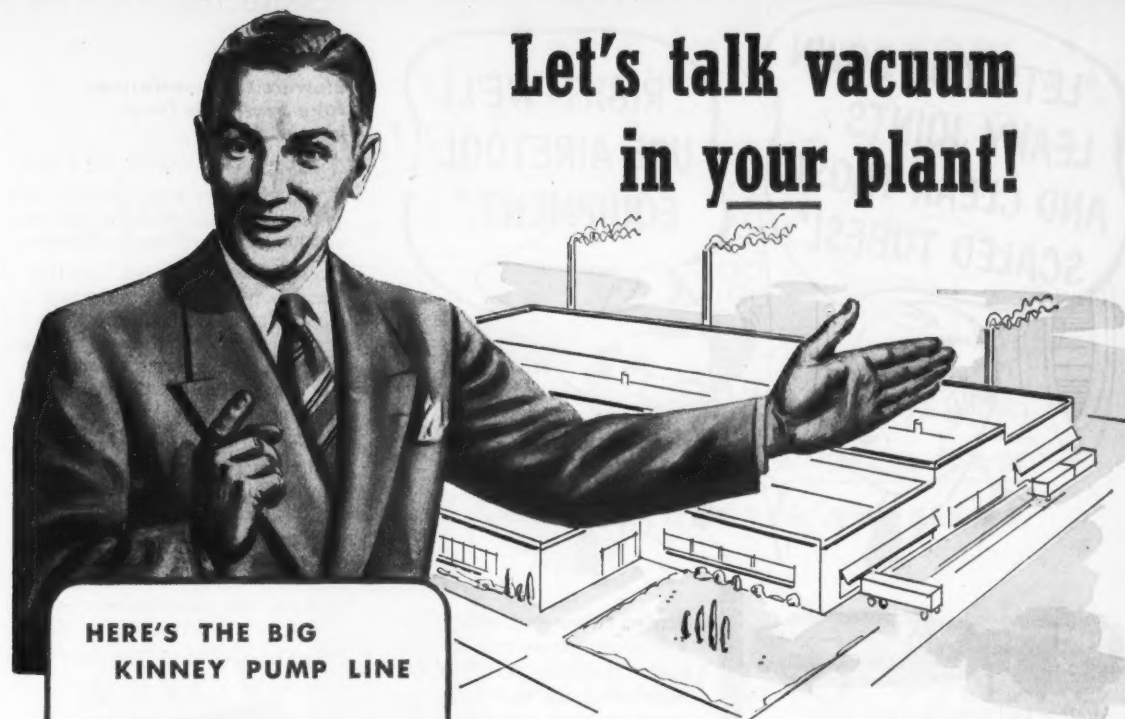
Uses: Typical applications include protection of the surfaces of wood, metal, or masonry surfaces wherever extreme resistance to oils, greases, or solvents is necessary. It is said to be ideal for oil processing plants, food processing plants, extraction units, and in chemical operations where resistance to acids or alkalis is a requirement.

Features: It is reported that the coating has been exposed in the presence of various oils for periods of years with no loss of film integrity. It also is said to stand up well around acids or alkalis.

Description: Major ingredients of coating are chemically resistant pigments and a resin which is a condensation product of bis-phenol and epichlorohydrin. In addition to withstanding the action of acids and alkalis, product also has excellent resistance to moisture, abrasion, greases, waxes, gasoline, fuel oil, weather, and temperature up to 300°F.

General appearance is a bright gloss in various colors which can be made to order. Coverage averages 400 to 500 sq ft per gal. Coating sets to touch in one hour and dries hard in four hours. It can either be brushed or sprayed.

(Valpon enamel is product of Valdura Div., American-Marietta Co., Dept. CP, 101 E. Ontario St., Chicago 11, Ill. . . . or for more information check CP 3763 on handy form, pages 2 and 3.)



Let's talk vacuum in your plant!

HERE'S THE BIG KINNEY PUMP LINE

Single Stage

Model DVH 27.20.34	1800 CFM
Model DVM 18.14.20	780 CFM
Model DVD 14.14.18	486 CFM
Model DVD 14.9.18	311 CFM
Model DVM 12.8.14	218 CFM
Model DVD 8.8.10	110 CFM
Model VSD 8.8.11	52 CFM
Model VSM 7.7.8	27 CFM
Model VSM 5.5.6	13 CFM

Compound

Model CVM 8.6.10	46 CFM
Model CVM 5.5.6	15 CFM
Model CVM 3534	5 CFM
Model CVM 3153	2 CFM

There's a qualified Kinney Vacuum Engineer in your region, ready to talk vacuum in your plant. Call on him. See how the BIG LINE . . . the Kinney line of vacuum pumps can be profitably used in exhausting lamps and tubes, freeze-drying pharmaceuticals and antibiotics, vacuum metallizing, vacuum production of titanium and other miracle metals, vacuum fumigation and impregnation — and in the countless other ways vacuum serves industry today. Kinney Manufacturing Co. — manufacturers of vacuum and liquid pumps. Boston, New York, Chicago, Detroit, Cleveland, Atlanta, Pittsburgh, Philadelphia, Los Angeles, Charleston (W. Va.), Houston, New Orleans, San Francisco, Seattle, and foreign countries.

SEND COUPON FOR DETAILS!



KINNEY MANUFACTURING COMPANY
3573 Washington Street, Boston 30, Mass.

- ☐ Please send Bulletin V-518 describing complete line of Kinney Vacuum Pumps.
- ☐ Please have your Vacuum Engineer call on us.

Name _____

Company _____

City _____ State _____

See us at the Chemical Show-Booth 950 — Convention Hall, Philadelphia, Nov. 30-Dec. 5, 1953

When inquiring check CP 3764 on handy form, pgs. 2-3

"LET'S CUT DOWN
LEAKY JOINTS
AND CLEAN THOSE
SCALED TUBES!"

"RIGHT-WE'LL
USE AIRETOOL
EQUIPMENT."



Airetool ball bearing motor with single expansion cutter head for cleaning straight tubes. Motor is slip-fit constructed, and has front and rear ball bearing thrusts.



Airetool direct drive condenser cleaner. Cleans straight tubes $\frac{3}{8}$ " to $1\frac{1}{2}$ " I.D. Air or steam driven. Removes all scale deposits regardless of condition.



Airetool Tube Expansion Control System automatically, accurately rolls tube joints. Eliminates danger of over or under expansion. For field, shop or new work.

BRANCH OFFICES: New York • Chicago
Philadelphia • Houston • Tulsa • Baton
Rouge • Hudson Heights (N.J.)
REPRESENTATIVES in principal cities in U.S.A.,
Canada, Mexico, South America



AIRETOOL
MANUFACTURING COMPANY

SPRINGFIELD, OHIO

Scaled tubes and leaky tube joints cut capacity, increase operating costs. AIRETOOL tube cleaners and tube expanders keep tubes at peak efficiency, reduce down-time due to tube failures. Powerful, high speed cleaners quickly and thoroughly remove even the hardest deposits from straight or curved tubes. Tight, leak-proof tube joints can be assured everytime, when they are rolled automatically, accurately, with the unique AIRETOOL Tube Expansion Control System.

You'll have an improved tube maintenance program and better tube efficiency if you specify AIRETOOL tube cleaning and tube expanding equipment. Do it today. Literature upon request.

There's an Airetool
Tube Cleaner and
Tube Expander For
Every Type of
Tubular Construction.

CONSTRUCTION

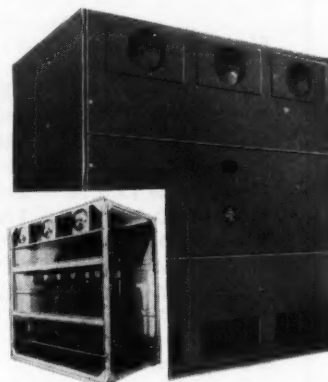
Blowers let transformer take overloads for a longer period . . .

increases rating by 33 $\frac{1}{3}$ %

Uses: Wherever transformers are applicable in ratings from 100 kva to 3000 kva in voltages to 15,000 v.

Features: Dual-rated, dry-type, heat-proof insulated transformer is said to take overloads for longer periods. Unit earns double rating as a result of blowers mounted in the housing, and a thermostat located in coils.

Description: One rating covers transformer's operation without blowers functioning, at which time unit is naturally cooled. When heat reaches a certain level thermostat activates blowers which provide forced-air cooling that automatically increases the transformer's rating by 33 $\frac{1}{3}$ %, according to manufacturer. Baffles in housing direct



Dual rating obtained with blowers activated by a thermostat

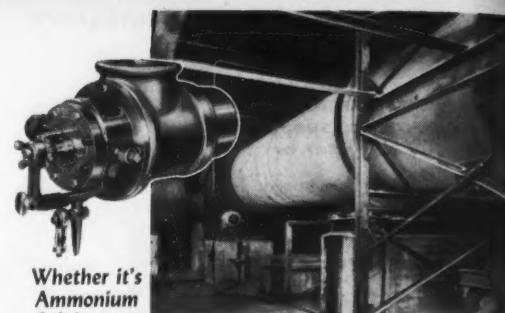
moving air over and through coils. Air vents are located at front and rear, top and bottom.

(Product of Marcus Transformer Co., Dept. CP, Hillside, N. J. . . or for more information check CP 3766 on handy Reader Service slip, pages 2 and 3.)

A company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS



Whether it's
Ammonium
Sulphate or
Fishmeal

6'x60' "Louisville" Direct Heat Dryer built by Gen'l. Amer. Transportation Corp., fired by Hauck Burners.

HAUCK PROPORTIONING OIL BURNERS

**Dry Your Product Faster
More Uniformly at Lower Cost**

No matter how large the rotary dryer or how complex the heating or drying process, experience in many chemical plants proves that Hauck Proportioning Oil Burners maintain production at minimum service cost because of

1. Exclusive single lever control.
 2. Assured constant air-oil ratio at any firing rate, by automatic self-proportioning feature.
 3. Clean combustion.
- Let Hauck Burners improve your drying processes. Catalog 410 on request.

HAUCK MANUFACTURING CO.

Industrial Oil and Gas Burners and Equipment
132-142 Tenth Street • Brooklyn 15, New York

When inquiring check CP 3767 on handy form, pgs. 2-3

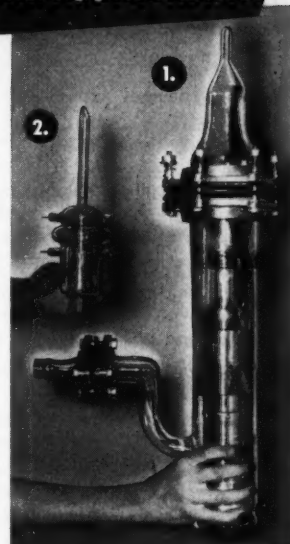
For High Vacuum Application . . .

1. HV-1 DIFFUSION PUMP

— a high speed oil-diffusion type pump with an ultimate vacuum of 4×10^{-7} mm. Hg. designed for general service including nuclear science, research or material processing. Among its features are 1) Speeds up to 67 liters/sec-ond, 2) Clear glass pump barrel, 3) Simple maintenance, 4) No liquid cooling, charcoal traps or mechanical wear.

2. 100-IG IONIZATION GAUGE

— a triode vacuum type ionization gauge that will measure pressure from approximately 10^{-3} mm. of mercury to 10^{-8} of mercury. Its Nonex glass can be sealed directly to exhaust systems employing Nonex or Kovar sealing glass, and to Pyrex by means of a graded seal. It has no internal insulators, and the en-



velope is designed to provide long leakage paths between the plate and other tube elements.

Complete Data Sent on Request. Write:

EITEL-McCULLOUGH, INC.
SAN BRUNO • CALIFORNIA

Export Agents: Frazar & Hansen, 301 Cloy St., S. F., Calif.

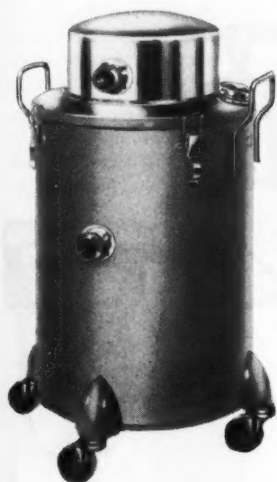
When inquiring check CP 3768 on handy form, pgs. 2-3

When inquiring check CP 3765 on handy form, pgs. 2-3

Wet or dry pickup on floors possible with vacuum-type cleaner unit

Heavy-duty cleaner for wet or dry pickup is for use in industrial and commercial floor maintenance. Designated Model P-901, unit has a 1 hp, 115 v, AC/DC motor with permanently lubricated ball bearings. It produces a vacuum equivalent to 58" average maximum water lift. Container — finished in durable, baked-on metallic gray — has a liquid capacity of 13 gal, and a dry capacity of 1.25 bushels. Filtering area is 1060 sq in.

Ball bearing swivel casters have soft rubber tread for ease of handling with maximum floor protection. A protector fuse prevents liquids from damaging motor when unit is used for wet pickup. Tank dimensions are: height, 35½"; diameter, 20½". Weight is 68 pounds.



Motor is protected against damage from liquids

Coming with the unit is a set of cleaning tools for general maintenance, including a rubber-lined hose and adapter, steel floor rod, aluminum floor nozzle, utility tool, and slide-on brush. A wet pickup tool kit including a rubber-bladed squeegee, steel-bladed squeegee, and suds shield are available as optional equipment.

(Product of Dept. KP, Premier Co.,

Dept. CP, 755 Woodlawn Ave., St. Paul 1, Minn. . . . or for more information reader may simply check CP 3769 on handy Reader Service slip between pages two and three.)

Industrial grades & compositions of lubricants presented

Various grades and compositions of industrial lubricants are described in technical detail in 8-page, 2-color catalog. Included is complete information on two grades recently introduced by manufacturer — a grease consistency mixture for extreme bearing pressure lubrication at temperatures ranging from -40°F to approximately 400°F; and a grease consistency mixture processed with a high grade silicone fluid and stabilizer. Data is also included on manufacturer's standard line of lubricants.

Bul 100 is available from The Alpha Corp., Dept. CP, 179 Hamilton Ave., Greenwich, Conn. When inquiring specify CP 3770 on handy form, pages 2 and 3.

a teaspoonful of steam!



**HERE'S THE ANSWER
TO YOUR SMALL FLOW
CONTROL PROBLEMS**

a NEW LESLIE REDUCING VALVE

for accurate, foolproof regulation of small flows of steam, air, gas or liquids, with inlet pressures to 1000 psi and reduced pressures from 2 to 400 psi.

Change operating conditions quickly and easily with simple, handwheel adjustment — no need to waste time changing springs or swapping parts. Check these widely accepted Leslie features that are standard in the new, efficient, Leslie Small Flow Reducing Valve.

Check these Features

- Simple, compact construction
- Top quality materials
- Metal Diaphragm
- Entirely enclosed — no stuffing boxes
- Corrosion resistant springs
- Hardened stainless steel valve
- Interchangeable inner valves

**SEND FOR DESCRIPTIVE BULLETIN 511-A
WITH COMPLETE CAPACITY TABLES**

Before you order —

The new Class LCB is just one of the many units that are *special* with most manufacturers but are *standard* with Leslie.

Check to see if any pressure, temperature or level control you want is standard with Leslie, before you order. Play it safe. Your Leslie Engineer is listed under "Valves" or "Regulators" in the classified telephone directory in principal cities.

LESLIE

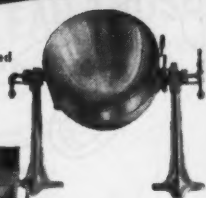
**THE FIRST NAME IN PRESSURE,
TEMPERATURE AND LEVEL CONTROLS**
Since 1900

LESLIE CO., 281 Grant Avenue, Lyndhurst, New Jersey

When inquiring check CP 3771 on handy form, pgs. 2-3

COOKING KETTLES

Style C
Two-thirds Jacketed
5 to 100 gal.



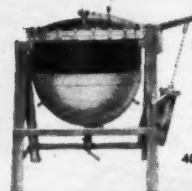
Style A
Two-thirds Jacketed
5 to 500 gal.



Style B
Full Jacketed
10 to 300 gal.



Style CW
Two-thirds Jacketed
80 to 300 gal.



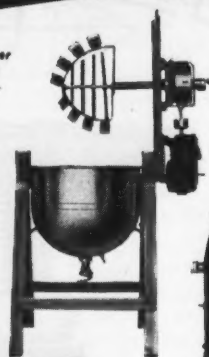
Pressure
Kettle
Two-thirds
Jacketed
40 to 200 gal.

MIXING AND BLENDING UNITS

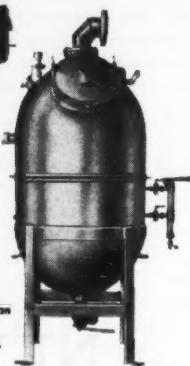
CW3T
Center-line Scraper
Agitator Kettle
80 to 300 gal.



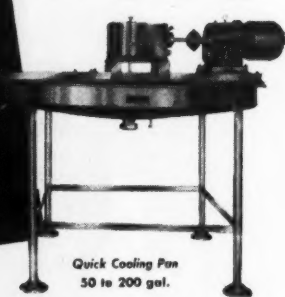
A3T
Center-line Scraper
Agitator Kettle
25 to 300 gal.



Vacuum Pan
30 to
500 gal.

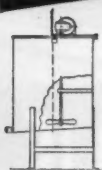


Quick Cooling Pan
50 to 200 gal.

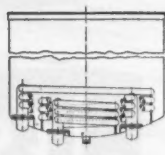


These
LEE Units
WILL REDUCE YOUR
PROCESSING COSTS!

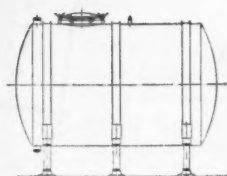
MIXING, COOKING & STORAGE TANKS



Mixing Tank
25 to 500 gal.



Pulp Tank
500 to 2,000 gal.



Storage Tank
100 to 5,000 gal.

Individually designed for a specific processing operation and available in a wide range of sizes to fit your exacting requirements, Lee corrosion-resistant equipment is built to give you long years of peak performance with minimum maintenance.

Descriptive bulletins are available for any or all of the above units. Write for them today and discover how Lee can help reduce your processing costs.

LEE

METAL PRODUCTS CO., INC.

418 PINE STREET,
PHILIPSBURG, PA.

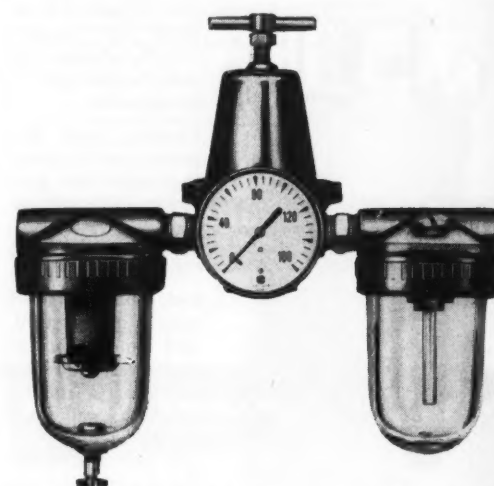
ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE

CONSTRUCTION & MAINTENANCE

Greater sediment retention, less loss of pressure offered by filter-regulator-lubricator

This multiple unit for use on air lines is said to contain numerous improvements over previous types produced by manufacturer. Filter part of unit contains a porous bronze element which has the ability to retain on its outer surface a much greater amount of sediment without a serious loss of pressure. Air or filtrate enters unit where centrifugal action throws moisture and heavier solids against bowl and downward into a relatively quiet zone below baffle where it is deposited.

Air or filtrate then goes through bronze element where even the finest particles are removed and only clean air or filtrate is allowed to pass through.



Multiple unit, showing from left, filter, regulator with gage, and lubricator

Amount of deposit can be observed through transparent bowl and removed through drain cock at bottom of bowl. Element can be taken out and cleaned with a blast of air from the inside to dislodge sediment adhering to outer surface.

Lubricator unit has been designed to deliver into air stream a finely vaporized mist of oil that remains in suspension and provides positive lubrication to precision working parts of air operated equipment.

A porous bronze feeder wick forces lubricant to enter air stream in a fine mist. Lubricator automatically varies oil delivery according to air flow requirements in most cases. However, if more or less oil is desired it may be obtained by varying elevation of bronze wick in air stream. Wick setting is readily observed through transparent bowl but is not subject to danger of being tampered with by persons not familiar with its operation.

Incorporated in the regulator unit are several improvements in design: a positive-action self-bleed feature for prevention of pressure build-up in dead end applications; a diaphragm of oil resistant material with Nylon cord reinforcement; and stainless steel bushings and center shaft.

When inquiring check CP 3772 on handy form, pgs. 2-3

Complete filter-regulator-lubricator unit as shown is obtainable in sizes $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1". Various combinations in these sizes may be used where the complete unit is not required. If only filtration is desired, filter may be installed in line, or lubricator may be used in like manner.

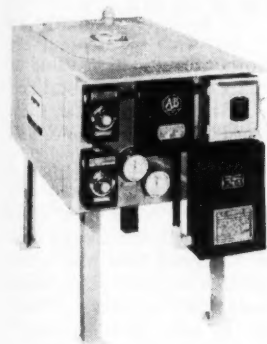
(Product of Arrow Tools, Inc., Dept. CP, 1900 S. Kostner Ave., Chicago 23, Ill. . . . or for more information check CP 3773 on form, pages 2 and 3.)

Seven-day timer adjustment on plastic dip tank makes unit ready at any set time

Uses: For use in coating tools, instruments, and metal parts for protection in storage and shipment, tanks are designed for efficient, safe, and economical heating of cellulose acetate butyrate, ethyl cellulose strip coatings, and similar compounds requiring high temperatures.

Features: Automatic seven-day timer, with adjustment for eliminating holidays, turns on electricity at any set time, so that tank is ready for operation when personnel arrive each morning.

Description: Plastic dip tank, UL approved, is sturdily constructed, heavily insulated to retain heat inside and keep outside of tank cool for the safety of operators. There is a jacket around the compound chamber, forming an oil chamber, which is filled with a non-carbonizing heat-transfer oil. Electric heating elements of high temperature sheath are so placed on the tank to distribute heat evenly and economically throughout, affording uniform temperature



Unit is ready for operation when personnel arrive each morning

without overheating, scorching, or deteriorating compound.

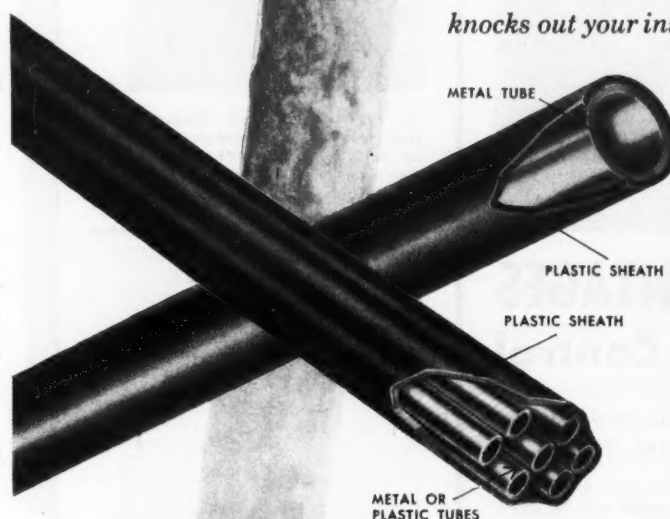
Tank has a hinged lid equipped with automatic fusible closing device which holds lid open when in use and automatically closes it in case of fire. Separate thermostat controls are placed in oil and compound chambers for automatically controlling temperature of both the oil bath and compound (which must be run at different temperatures).

Bottom agitator, for slowly mixing molten compound, has safety features which prevent it from operating until compound is sufficiently molten. Tanks are available in sizes ranging from $3\frac{1}{2}$ to 1000 gallon capacity.

(Product of D. C. Cooper Co., Dept. CP, 1467 S. Michigan Ave., Chicago 5, Ill. . . . check CP 3774 on handy form, pages 2 and 3.)

DEKORON INSTRUMENT TUBING

knocks out your instrument line corrosion problems



DEKORON single-line tubing. Samuel Moore & Co. will coat your copper, aluminum or steel tubing by the Dekoron extrusion process, or will supply coated tubing. Straight lengths to 20 ft., coils to 1000 ft.

DEKORON IMPERVAPAK is a multiple tube harness of plastic or metal tubes encased in tight plastic sheath. Multiple tube construction cuts down installation costs.

Corrosion endangers the life line of your plant—your instrument tubing. That's why you should investigate Dekoron instrument tubing, the tubing that's impervious to moisture, salt air, corrosive atmospheres, and chemicals.

That means Dekoron eliminates replacement costs and maintenance. Other advantages are low initial cost . . . less plant down time . . . easy installation with standard fittings and plastic tape.

In replacement savings alone—not including lower maintenance and installation costs—Dekoron Instrument Tubing pays for itself over and over again.

A-7854

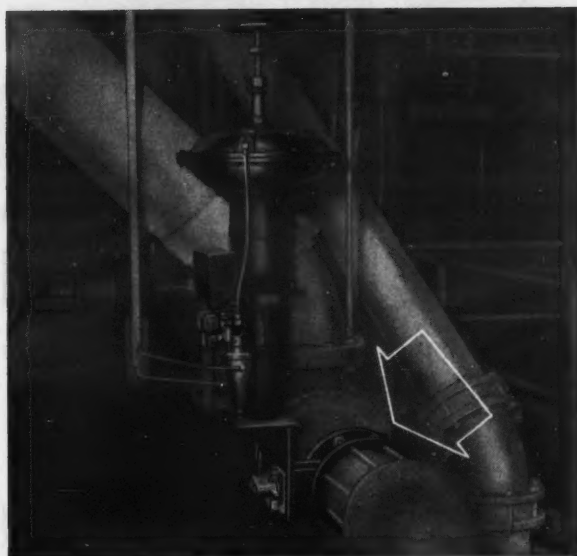
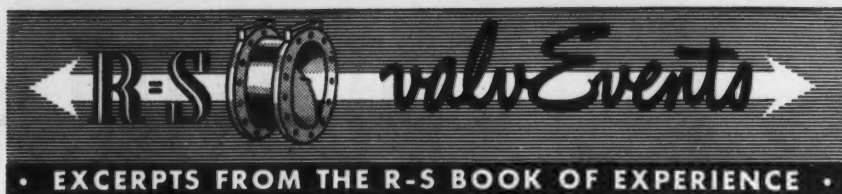


Send for free copy of Bulletin L-6506
"3 Ways to Whip Corrosion and High
Tubing Installation Costs in Your Plant."

Dekoron tubing



When inquiring check CP 3775 on handy form, pgs. 2-3

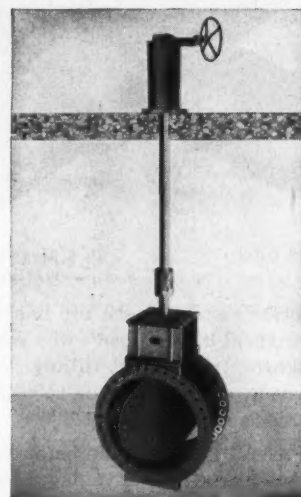


No. 677-A—1500-pound welding-end steel valve for superheated steam service. A. S. M. E. standards with heavy duty handwheel control.

R-S VALVE ADVANTAGES Under Automatic Control

1. Wide range of throttling from open to closed position. 30 to 1 is standard. Minimum torque required for positioning.
2. Any type of instrument or control actuator can be used depending on preference and conditions. In any application, the R-S Valve usually costs less to purchase, less to install and results in lower pumping costs due to simplicity of design.
3. R-S Valve design offers no pockets to capture sediment, no change of flow-direction to create turbulence. Freedom from turbulence reduces erosion and cavitation and therefore adds to the life of the valve.

R-S Valves are used for regulation, pressure reduction, liquid level control, flow control, shut-off and other functional applications.



No. 864—50-pound valve equipped with rubber seal, extended shaft, thrust bearing, floor stand and heavy duty hand-wheel control.

Consult your local R-S Valve Engineers, or write direct.

R-S PRODUCTS CORPORATION • 4600 Germantown Ave., Philadelphia 44, Pa.
An S. Morgan Smith Company Subsidiary

REPRESENTATIVES IN PRINCIPAL CITIES

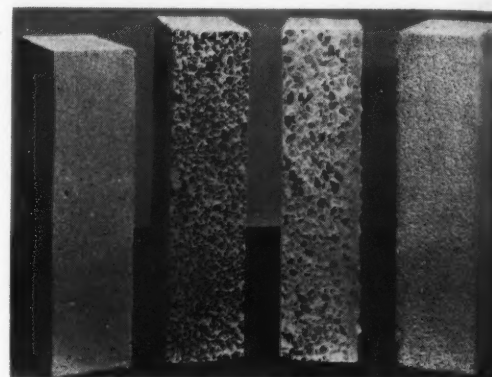
When inquiring check CP 3776 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Cellular concrete — It's strong, yet very light — can be sawed and nailed like wood . . .

has excellent insulating, water resisting, and acoustical properties

Cellular concrete widely used in Europe and now being introduced in this country is quite strong, yet weighs only 1/7 to 1/4 as much as conventional concrete, depending on requirements. Material, known as Calsi-crete, can be nailed, sawed, and cut like



Four forms of cellular concrete have densities, from left to right of 40, 50, 44, and 20 lb/cu ft

wood. It has 8 to 16 times the insulation value of regular concrete and exhibits excellent acoustical and water resisting properties. It is said to be an ideal construction material for walls, roofs, partitions, and other uses.

Cellular concrete is an aerated calcium hydrate. It is lightened by adding preformed foam to a slurry comprised of siliceous material with the chosen mixture of cement and water. Aerated fluid mix is cast to exact size or can be cut into required sizes before being cured in high pressure steam autoclaves. Product is ready to use within 24 hours after mixing.

Three types of the lightweight material will be manufactured, each varying in strength and other characteristics, depending on particular application. Type having bulk density of 40 to 55 lb/cu ft provides the best structural qualities. This compares with density of 150 lb/cu ft for regular concrete. Material of this density is used for both inside load bearing walls and facings, exposed or covered roof planks, and similar applications.

Products with density of 30 to 40 lb/cu ft are suitable for partitions, roof slabs, and related uses. Lower strength material of 15 to 30 lb/cu ft density can be used for fire door cores, wall panels, ceilings, pipe coverings, and cold storage or refrigerated rooms. It is believed that the most suitable block size will be 16" x 8" x required thickness.

In one laboratory experiment, an acetylene torch with a 2000°F flame was held against one spot on a three inch thick block without noticeable heat transfer to the other side. In another experiment, material varying from 20 to 50 lb/cu ft was found to float on water indefinitely.

CONSTRUCTION & MAINTENANCE

Because of its unicellular structure, product provides a moisture barrier having less than $\frac{1}{4}$ the water absorption of regular building brick. In a third test, a three inch panel was subjected to water spray at full main pressure (80 psi) from two jets, each discharging 100 gph. After 500 hours the test was discontinued as no moisture had penetrated to the rear face of the panel.

Material has stood up very well under freezing and thawing tests, according to manufacturer. Cracking during and after plastering is reported to be virtually eliminated. Product is produced with high dimensional accuracy and, when necessary, with an excellent keying surface. This allows a minimum of plastering. It is delivered to site in its fully cured state, minimizing breakage.

Indicative of the wide acceptance of aerated calcium hydrate products is the increased use in European countries. In 1952 60% of all building in this country was performed with aerated concrete.

(Information on cellular concrete may be obtained from Calci-crete Corp., recently formed by Jackson & Church Co., Dept. CP, Saginaw, Mich. . . . or check CP 3778 on handy form, pages 2 and 3.)

Maintenance costs reduced by plastisol coating for electroplating fixtures

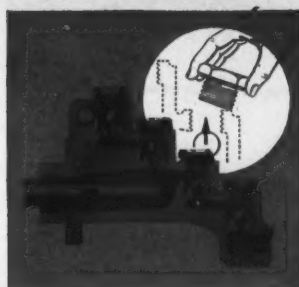
Uses: For insulating and protecting racks, fixtures, and anode hooks used in electroplating baths. Purpose of a coating material is to prevent metal from plating onto or off of the racks, fixtures, and hooks during electro-processing.

Features: This plastisol coating is specially formulated to reduce maintenance costs. Because it is unusually tough and ductile, coating will withstand rough treatment and abuse, and will wear longer both in and out of plating bath. It has a dielectric strength of 600 v per one mil thickness at 20 to 25 thousandths of an inch; and a dielectric strength of 125 to 150 v per one mil thickness at thicknesses up to $\frac{1}{8}$ ".

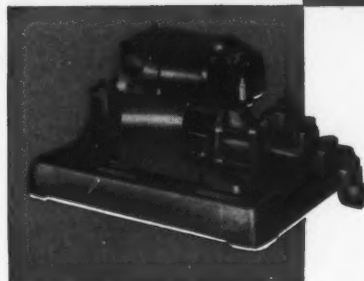
Description: Said to be a smoother, more stable coating, Kote-Rax Grade L assures minimum drag-out loss; it retains its original color permanently. This is a light orange, which can be easily checked for aging defects. Coating is resistant to all commonly used cleaning, pickling, and plating solutions.

Coating is easy to apply to racks and fixtures. After a primer has been applied and fixtures heated for 10 min at 350°F, they are dipped, still hot, into coating material and left until thoroughly cooled (usually 2 to 5 min). After cooling, coated fixture is removed from coating tank and baked at 350°F for 10 min. If a heavier coating is desired, this procedure would be repeated, eliminating priming and lengthening second bake to 15 min.

(Kote-Rax Grade L is a product of Hanson-Van Winkle-Munning Co., Dept. CP, Matawan, N. J. . . . or for more information check CP 3779 on handy form, pages 2 and 3.)



Basic design simplicity of the exclusive Milton Roy liquid end step-valve assures high and reproducible volumetric efficiency. Inspection, servicing, or thorough cleaning of individual ball-checks and seats are effected without disturbing piping or other ball-checks and seats.



CONTROLLED VOLUME PUMPING
INSTRUMENTATION
PROCESS CONTROL SYSTEMS
BLENDING AND FORMULATING

Two-to-One Service Life with this Milton Roy Pump

ON THE JOB for a leading chemical manufacturer, this Milton Roy Motor-Driven Controlled Volume Pump is still going strong after $4\frac{1}{2}$ years of operation . . . has needed very little maintenance. A previously employed chemical feed pump, on the other hand, lasted only $2\frac{1}{2}$ years, and required considerable maintenance.

Long service life is just one of many reasons why rugged Milton Roy Pumps are in wide use throughout industry. Wherever requirements call for precise metering of measured quantities of liquid in controlled volume, there's one of these versatile instruments to do the job. Capacity of each pump is variable from 0 to 100% by any one of several mechanical or automatic means of plunger stroke or speed adjustment.

Driven by motor, or powered by air, Milton Roy Pumps meter practically any liquid . . . in capacities from 3 milliliters per hour to 45 gallons per minute, against pressures up to 25,000 pounds per square inch. They are available as single or multiple units or as component parts of complete chemical feed and control systems. We invite your inquiries.



New Bulletin No. 553 tells the complete story on Milton Roy Motor-Driven Controlled Volume Pumps and their application. Write for your free copy.

Engineering Representatives in the United States, Canada, Mexico, Europe, Asia, South America and Africa.

Manufacturing Engineers



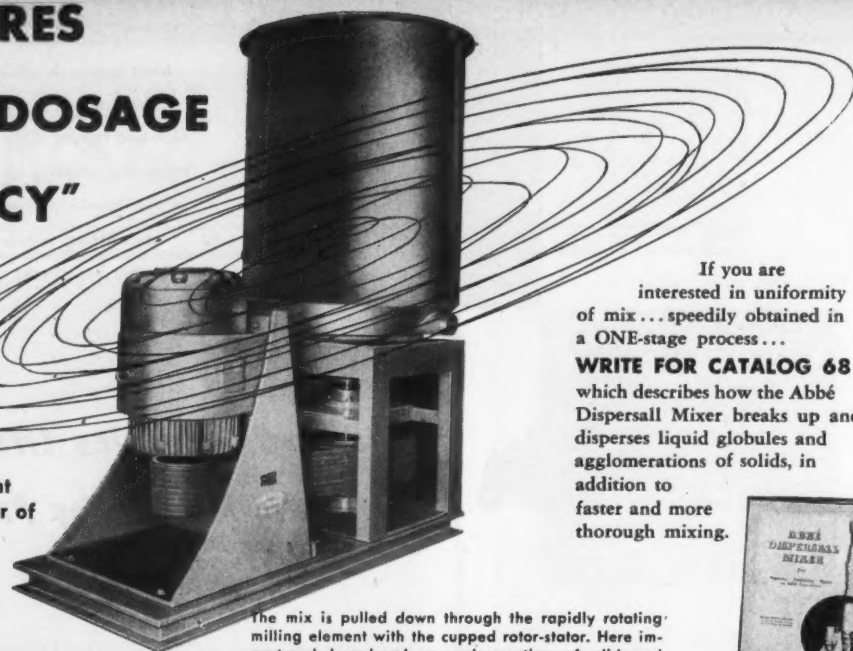
1324 S. HERMAID LANE • PHILA. 18, PA.
CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

When inquiring check CP 3780 on handy form, pgs. 2-3

"IT INSURES

**Uniform DOSAGE
POTENCY"**

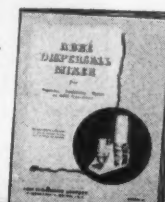
This is the comment
of a large producer of
penicillin with
reference to their
**ABBÉ
DISPERSALL
MIXERS**



If you are
interested in uniformity
of mix...speedily obtained in
a ONE-stage process...

WRITE FOR CATALOG 68
which describes how the Abbé
Dispersall Mixer breaks up and
disperses liquid globules and
agglomerations of solids, in
addition to
faster and more
thorough mixing.

The mix is pulled down through the rapidly rotating
milling element with the cupped rotor-stator. Here im-
pact and shear break up agglomerations of solids and
liquid globules to speed up the dispersion of the mix.



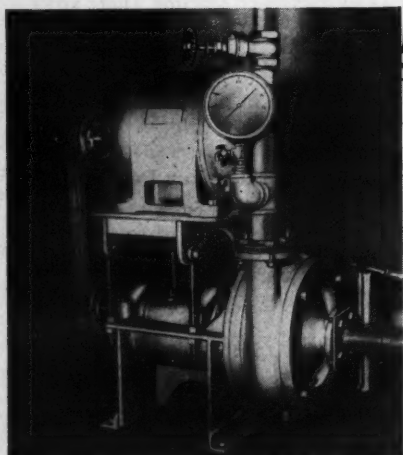
ABBÉ ENGINEERING CO. • 46 CHURCH STREET, NEW YORK 7, N. Y.

Makers of

ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 3781 on handy form, pgs. 2-3

Report to industry on 3-year VACSEAL tests



Now the story can be told of on-the-job
performance of Vacseal Pumps. Accurate
records on 3-year tests of Vacseals — both
vertical and standard — show beyond doubt the
triumph of the Vacseal feature which eliminates
impeller adjustments and requires no sealing water
to protect glands and clearance spaces.

"Unfailingly efficient service and only one part re-
placed in three years" is typical of reports on many
installations handling acid, corrosive and abrasive
materials. For all the facts on Vacseal — the pump
that stands up to its job with far less servicing—write
for case history that parallels your kind of operation.
Catalog free on request.

Leaders in Experience & Service

VACSEAL PUMPS

THE GALIGHER co.

CONSULTATION • ORE TESTING
PLANT DESIGN • GEOLOGIC INVESTIGATION

HOME OFFICE: 545 West 8th South, Salt Lake City, Utah, P. O. Box 209

EASTERN OFFICE: 921 Bergen Avenue, Jersey City, New Jersey

Agents In All Principal Foreign Mining Districts



When inquiring check CP 3782 on handy form, pgs. 2-3

New

Detailed info on several pyrometer controllers

Twenty-page booklet is punched for inclusion
in three-ring looseleaf binder. It details sev-
eral temperature control units including those
featuring electronic control, on-off, two-posi-
tion and three-position control, time-proportion-
ing, etc. Under each type of instrument infor-
mation is included on operation and control
characteristics.

General specifications are given for all control
models and are rounded out with detailed
specifications for individual instrument types.
Tabulated data and sample scales are included
as are photographs, drawings, and schematics.

Cat 1053 is issued by Brown Instrument Div.,
Minneapolis-Honeywell Regulator Co., Dept.
CP, Station 64, Wayne & Windrim Aves.,
Philadelphia 44, Pa. When inquiring specify
CP 3783 on handy form, pages 2 and 3.

Release 20 more patents from AEC

Twenty patents owned by the U.S. Government
and held by the Atomic Energy Commission have
been transmitted to the U.S. Patent Office for
registry and listing. Patents include: Leakage
Testing Method, Pocket Radiation Meter, Prepa-
ration of Uranium Bromide, Rare Earth Separation
by Anion Exchange, Uranium Complexes of
Heterocyclic Diketones, and Vacuum Die Casting.
May 12, 1953, Vol III is issued by U.S. Atomic
Energy Commission, Washington 25, D. C.

Poster emphasizes wearing of safety goggles

Four-color, 11 3/4 by 15" poster helps sell plant
worker the idea of wearing safety goggles. It has
two scenes: at left is pictured a relaxed, contented
man reading The Readers' Digest; on the right is
reproduced in actual Braille a facsimile page from
the magazine's Braille edition, being "read" by
hands printed in position. Headline asks, "Which
way would you rather read?" Subhead says,
"Wear your safety goggles."

Quantities for posting on bulletin boards are avail-
able free from Willson Products, Inc., Dept. CP,
Reading, Pa. When inquiring specify CP 3784
on handy form, pages 2 and 3.

Info on water-soluble fertilizers slanted toward manufacturers

Facts and figures which fertilizer manufacturers
will find valuable as an aid in formulating, pack-
aging, and merchandising water-soluble fertilizers

Literature

are contained in an informative, 22-page bulletin. Market for such fertilizer products is described together with the underlying reasons for growth of the industry anticipated in the near future. Briefs of the various state regulations or laws on labeling, taxes or fees, and other pertinent points applicable to manufacturers also are reprinted. "Concentrated Water-soluble Fertilizers" is issued by Phosphate Div., Monsanto Chemical Co., Dept. CP, St. Louis 4, Mo. When inquiring specify CP 3785 on handy form, pages 2 and 3.

Practical measurement practices for petroleum and its products

Comprising seven ASTM Standards with considerable additional explanatory and descriptive material, factual manual presents the latest and most practical measurement practices for petroleum and petroleum products. Booklet provides recognized methods of measuring and computing oil in storage tanks of various types and for getting typical samples.

To obtain "Measurement and Sampling of Petroleum and Petroleum Products" remit \$1.50 direct to American Society for Testing Materials, Dept. CP, 1916 Race St., Philadelphia 3, Pa.

Cartons stay on belt at 55° grade — catalog describes how

Manufacturer's catalog describes new conveyor belt that moves cartons and packages up and down grades as steep as 55°. Catalog describing Ribflex-Griptop package conveyor belt is issued by The B. F. Goodrich Company, Dept. CP, Akron, Ohio. When inquiring specify CP 3786 on handy form, pages 2 and 3.

Explains electronic instrument design and theory

Twelve-page illustrated booklet is a condensed textbook on electronic instruments. Dealing exclusively with manufacturer's electronic system, it first covers general aspects of the system, then considers individual components. More than half the booklet is devoted to theory and design of electronic circuitry used in basic controller.

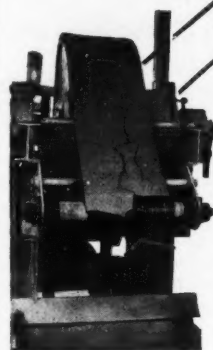
Circuits and equivalent circuits are given. These are explained in a brief mathematical analysis which shows behavior of instrument.

Publication A-711 is issued by The Swartwout Co., Dept. CP, 18511 Euclid Ave., Cleveland 12, Ohio. When inquiring specify CP 3787 on handy form, pages 2 and 3.

YOU CAN PUT ALMOST ANY FILTER CAKE ON STRINGS



STICKY GELS



HEAVY SLUDGES



THIN SLIMES

The famous FEinc String Discharge handles almost any type of cake . . . thin, soupy slimes . . . heavy or coarse granular materials . . . or sticky gels. In every case, the cake is lifted cleanly from the cloth, with no scraper to smear, plug, and wear the fabric. Cloths last two to five times longer . . . and lighter, more efficient weaves can be used.

Other FEinc features back up this performance. The FEinc compression dewatering mechanism removes 2% to 6% more moisture from the cake. If washing is necessary, the FEinc submergence type washing mechanism, with a compression belt to close up cracks and prevent "channeling" of the wash water, washes out more solubles with less dilution.

Whether you're after a clean dry cake, or high soluble recovery with minimum dilution . . . and regardless of the consistency of your cake . . . write us today for more details. Ask for Technical Bulletin 103.



FILTRATION ENGINEERS INC.

155 ORATON STREET • NEWARK 4, NEW JERSEY

HOW TO LEARN MORE ABOUT FEinc FOR YOUR PROCESS....

1 FREE TESTING SERVICE

At no expense to you, we'll test your slurry and send you a complete report on what FEinc filters can do for you. In your plant, without interrupting your process, or in our laboratory, with a 5-gallon sample of your slurry. Send it today!



2 PILOT PLANT FILTER

RENT this small but complete rotary filter. Has all FEinc features, plus interchangeable scraper discharge. No capital investment is required, and a generous part of the low monthly rental can be credited against the future purchase of any FEinc filter. Write today for details.



When inquiring check CP 3788 on handy form, pgs. 2-3

Model TA has *What it Takes* to do **TOUGH** mixing



GROEN

STAINLESS STEEL
STEAM JACKETED
TWIN-SHAFT
MIXER KETTLE

ASK US ABOUT
THE HIGH SPEED
ROTA-THERM
JACKET

Attains fastest cooking speed ever produced by any kettle! Multiple steam inlet design develops high velocity steam circulation instantly. No air pockets . . . no cool areas, possible. Gives all advantages of stainless steel plus swift operation. Ask for Bulletin RT-1.

IT'S A RUGGED, SANITARY UNIT

- Stainless steel from top to bottom. Completely sanitary — conforms to the most rigid Health Dept. requirements. Twin shaft operation for highest efficiency in mixing. Fully enclosed motor drives two shafts: (1)—at slow speed operating Flexible Finger-Like scrapers; and (2)—a secondary high-speed shaft equipped with any of a variety of beaters, blenders or mixers.

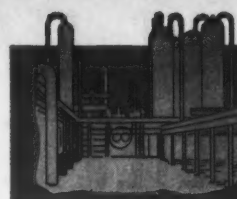
- Demountable shaft couplings permit entire agitator assembly to be removed in a few seconds for easy cleaning, and as quickly reinstalled. Cannot disengage in operation. And couplings equal strength of a solid shaft. Read all about this widely famous mixer in Bulletin TAK-2. Write for it now.

GROEN MFG. CO.

4531 W. Armitage Ave., CHICAGO 39, ILL.
30 CHURCH ST. (HALF A CENTURY OF FINE KETTLES) NEW YORK 7
7 FRONT STREET, SAN FRANCISCO 11

When inquiring check CP 3789 on handy form, pgs. 2-3

222



Processing and Engineering Data



54

Viscosity of Polyethylene Glycols

By D. S. DAVIS

Professor of Chemical Engineering
Virginia Polytechnic Institute

This nomograph allows convenient and accurate estimation of kinematic viscosities of eight polyethylene glycols.¹

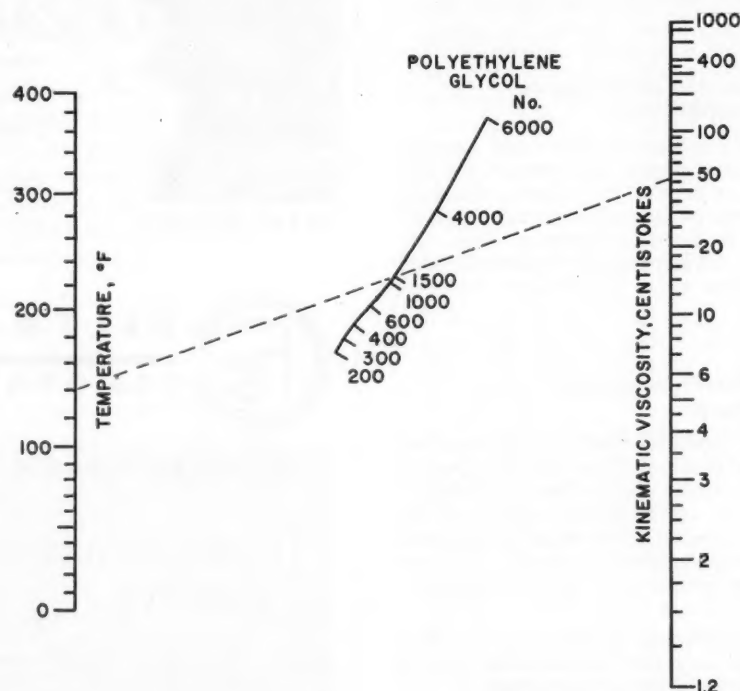
Typical Example

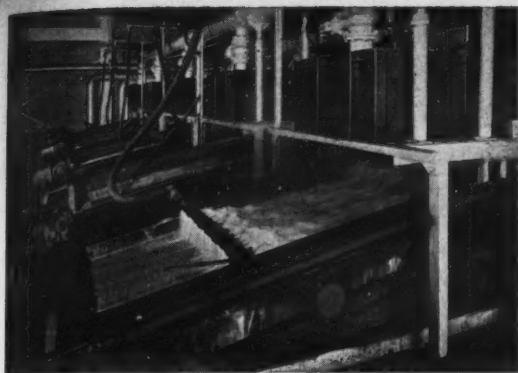
What is the kinematic viscosity of polyethylene glycol number 1500 at 140°F?

Connect 140 on temperature scale with 1500 on

polyethylene number scale. Viscosity is shown to be 47 centistokes on scale at right.

1) Based on data given in figure 4 of "Carbowax Polyethylene Glycols," a presentation of the Carbide and Carbon Chemicals Corp. Note that there is an apparent discrepancy in scale (viz — "reversal of 1000 and 1500"). This is due to system of nomenclature for polyethylene glycols.





Recover profits from waste water with LINK-BELT liquid vibrating screens

DON'T let profits go down the drain! With Link-Belt liquid vibrating screens, you can efficiently separate relatively fine solids from large volumes of liquid. Many leading canners and packers realize this extra revenue—and reduce stream pollution at the same time. For complete information, write today for Book 2377.

LINK-BELT

LIQUID VIBRATING SCREENS

LINK-BELT COMPANY 13, 123
2045 W. Hunting Park Ave., Philadelphia 40, Pa.

When inquiring check CP 3790 on handy form, pgs. 2-3



NO EMPTY BINS! OVERFLOW!



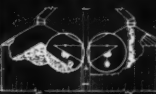
SA TELLEVEL
Automatic

**FOR BINS, HOPPERS,
TANKS, ETC.**

Provides continuous, dependable level control for bulk materials or liquids. Mount

Tellevels near top and bottom or at various levels in bins, tanks, etc. Rising or falling material moves light float-ball stops or starts conveyor, elevator or pump. Normal duty, heavy duty and explosion-proof models.

**bin-
level
control**



Rising level of material lifts float-ball and stops conveyor

STEPHENS-ADAMSON MFG. CO.
Standard Products Div.
11 Ridgeway Avenue, Aurora, Ill.

Please send me your Tellevel Controls Bulletin 11-0

NAME

COMPANY

ADDRESS

CITY

ZONE STATE

MAIL
COUPON
TODAY
FOR FULL
DATA

When inquiring check CP 3791 on handy form, pgs. 2-3

NEW LITERATURE

Covers cast iron frame corrosion-resistant motors

For applications where corrosion is a problem, line of cast iron frame totally enclosed non-ventilated motors is announced and described in four-page bulletin. Manufacturer recommends them for use in chemical plants, paper mills, refineries, and similar locations where extra protection against corrosion is a required feature.

The motors are available in frame sizes 66, 203, and 204. They can be obtained in the standard type EP, and also as explosion-proof type JP, with Underwriters' Laboratories approval for Class I Group D hazardous locations.

This addition furnishes industrial users with a complete range of cast iron frame enclosed motors, from 1/2 through 250 hp.

Construction of motor provides a wall of cast iron completely around the stator laminations. Although windings are enclosed, they are treated with a heavy coat of acid and alkali resisting varnish. Unit has cast iron conduit box and endplates. Rotor is cast aluminum.

Back cover of catalog illustrates type AE dry type transformers rated 3 through 50 kva now available from stock.

Cat EU-106 No. 11 is issued by Wagner Electric Corp., Dept. CP, 6400 Plymouth Ave., St. Louis 14, Mo. When inquiring simply specify CP 3792 on handy Reader Service slip between pages two and three.

Use of surfactants in making of fertilizer

A study in the use of surfactants in the manufacture of fertilizer by acidulation is presented in a 2-page data sheet. Data concerns two of manufacturer's surfactants and explains directions for their use and the results that may be expected.

Bul 54 is issued by Universal Detergents, Inc., Dept. CP, 1825 East Spring Street, Long Beach 6, Calif. When inquiring specify CP 3793 on handy form, between pages two and three.



ultra-filtration

**removes the dust you can't see*
to keep precision machinery humming

Even atmospheric air contains dust that interferes with precision manufacturing and assembly processes or products requiring utmost purity. The newest and least costly method of providing super clean air for these operations is ultra filtration.

Actual tests of Dustube Collectors employing the ultra filtration principle have shown greater collection efficiencies against fine atmospheric dust than heretofore obtained by other types of equipment in the same application. Not only do Dustube Collectors employing ultra filtration cost less to install, but less to operate and maintain as well, because of less frequent cleaning, faster cleaning and the elimination of periodic replacement of various segments of the mechanism.

Ultra filtration removes all the contaminants which might impair machinery or the product. A few of its profitable applications are in aircraft engine factories, electrical control rooms, motor rooms, optical glass and instrument manufacture, bearing assembly rooms and in such chemical processes as film manufacture or fermentation.

For complete details send
today for Catalog 72-B.



When inquiring check CP 3794 on handy form, pgs. 2-3

HERE'S THE ANSWER TO YOUR ACID HEATING OR COOLING PROBLEM..



HEIL 1277 SHELL AND TUBE EXCHANGER
WITH NOCORDAL® TUBES

PUT NOCORDAL® IMPERVIOUS GRAPHITE HEATING AND COOLING UNITS TO WORK FOR YOU

1. LONGER SERVICE LIFE

Nocordal is Practically Inert to Most
Strong Acid Solutions.

2. YOU SAVE TIME AND MONEY

Pre-Engineered Standard Units Available
in Field Tested Designs.

3. LOWER OPERATING COST

Superior Heat Transfer Characteristics
Coupled With Efficient Design.



STEAM JET
AGITATOR



IMMERSION GRID UNIT

STANDARD DESIGNS AVAILABLE FOR

- SHELL AND TUBE
- IMMERSION COILS
- ELECTRIC UNITS
- JET AGITATORS

Write Today
For
Illustrated
Bulletin

Representatives in all Principal Cities

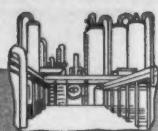
Other Heil Products Include: Lined Steel Pipe • Acid Proof
Maintenance Materials • Lined Process Tanks • Lead Fabrication



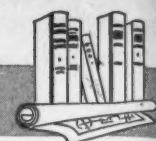
HEIL PROCESS EQUIPMENT
CORPORATION

13901 Elmwood Avenue • Cleveland 11, Ohio

Sales Offices: New York City • Chicago



Processing and Engineering Data



55

Differential Evaporation of a Binary Mixture

By GEORGE E. MAPSTONE

and D. S. DAVIS

Professor of Chemical Engineering, Virginia Polytechnic Institute

FOR the differential evaporation of a binary system that obeys Henry's law, this (integrated) form of the Rayleigh equation can be written —

$$R = \left(\frac{x_L}{x_F} \right)^{\frac{1}{K-1}}$$

where:

- R = fraction of liquid residue
- x_L = fraction of one component in liquid residue
- x_F = fraction of same component in original liquid
- K = Henry's law (or equilibrium) constant

R, x_L , and x_F may be expressed as mole fractions or fractions by weight so long as fractions used are consistent.

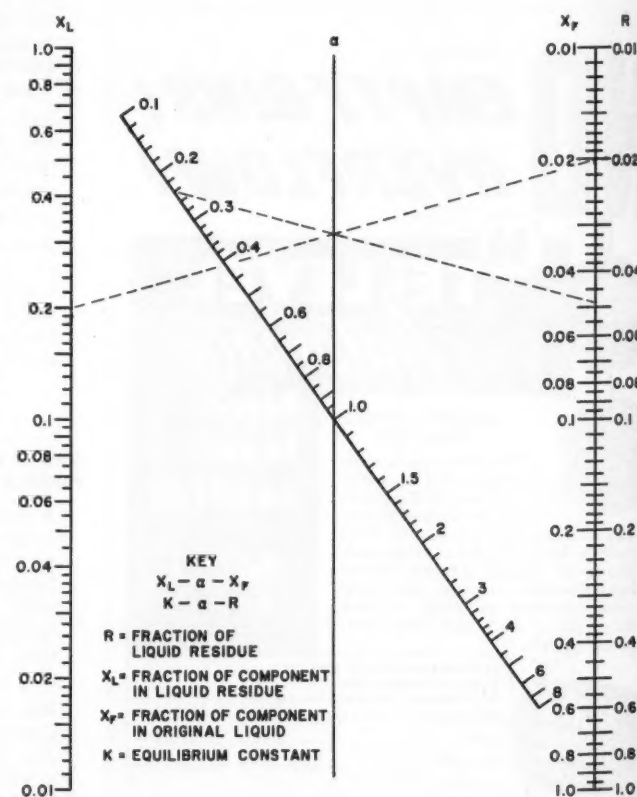
Since value of K must be constant, evaporation must be essentially isothermal and isobaric, conditions that are closely approached during spontaneous evaporation or the simple distillation of dilute solutions where there is negligible refluxing of the vapors or entrainment of the liquid and only a relatively small change in the composition of the residual liquid.

Typical Example

What is the mole fraction of liquid residue when the mole fractions of the same component in the liquid residue and in the original liquid are 0.2 and 0.02, respectively, and equilibrium constant is 0.24?

Connect 0.2 on the x_L -scale with 0.02 on the x_F -scale with a straightedge. Note intersection on α -scale. Draw a straight line from this point to 0.24 on the K-scale and read the desired mole fraction on liquid residue as 0.048 when line is extended to R-scale.

Nomograph solves equation conveniently and accurately for any of the four variables, once values of the other three are known. For low concentrations of one component, both x_L and x_F may be multiplied by same convenient factor of 10, 100, etc to obtain value suited to the nomograph.



Facilitates selection of hoods and respirators

Protective hoods designed especially for use with manufacturer's dust, paint and chemical respirators are pictured and described in two-page bulletin. Catalog information is included to facilitate ordering protective hoods and respirators together, the hoods alone, or replacement parts.

Pictured are the manufacturer's Dustfoe Dust Hood which protects head, eyes and face against excessive dust and light abrasive showers. It is made of Dynel cloth and is equipped with rigid vinyl plastic lenses which are removable for cleaning. The Gasfoe Paint Hood is of Vinyon-N cloth with a wide-vision vinyl plastic window. It permits wearing of the cartridge outside. A Comfo Dust Hood is of soft vinyl plastic and allows installation of the respirator without removing the hood.

Also shown is a Comfo Chemical Hood which has a wide-vision facepiece and auxiliary replaceable lens covers.

Bul No. 1000-1 is issued by Mine Safety Appliances Co., Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. When inquiring specify CP 3796 on handy form, pages 2 and 3.

Covers continuous balance control in theory and practice

Sixty-page catalog is printed in two colors and adequately illustrated. It describes several types of controllers built on the electronic principle and also delves into electric and pneumatic control. Background material, theory, and design factors are included, but application information is also given in publication.

Broad headings of the catalog are introduction, strip chart controllers, circular chart controllers, circular scale controllers, and electronic and pneumatic control. Special instruments and supplementary information are given at end of book.

Cat 1530 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 64, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 3797 on handy form, pages two and three.

Power, gravity type conveyors are both described

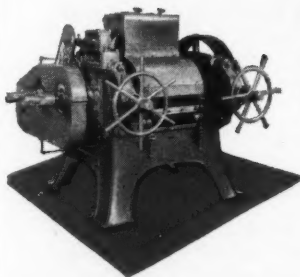
Twelve-page, illustrated catalog describes manufacturer's line of power type (overhead and belt) conveyors and gravity (roller and wheel) conveyors. Construction features, types available, and advantages of units are outlined. Photos include applications.

Cat PE-G-1 is issued by Mechanical Handling Systems, Inc., Dept. CP, 4600 Nancy Ave., Detroit 12, Mich. When inquiring specify CP 3798 on handy form, pages 2 and 3.


**FLAKING
MILLS**

Double...Triple...*Quadruple*

YOUR IMPACT MILL CAPACITY BY PRE-MILL FLAKING...



Allis-Chalmers flaking mills are also available in the open base type. This style permits routing conveyors under the mill.

By rolling your mill feed into broad-surfaced flakes of uniform thickness, the Allis-Chalmers flaking mill speeds your subsequent grinding operation two to four times. The principle is basic . . . flakes shatter much easier than blocky materials.

A complete line of Allis-Chalmers flaking mills is available to meet any chemical industry requirement. Built in four sizes from 15x30 to 32x40 inch rolls, these units are designed to provide low cost, heavy duty performance and

year-after-year dependability.

Pre-mill flaking is just one of the many adaptations of Allis-Chalmers equipment and engineering in the chemical industry . . . adaptations that give high production, top quality products and low processing cost. Your Allis-Chalmers field engineer can help you. He is an application specialist . . . trained to work with your staff . . . to appraise your equipment needs expertly. Contact your nearby A-C sales office or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4094

ALLIS-CHALMERS

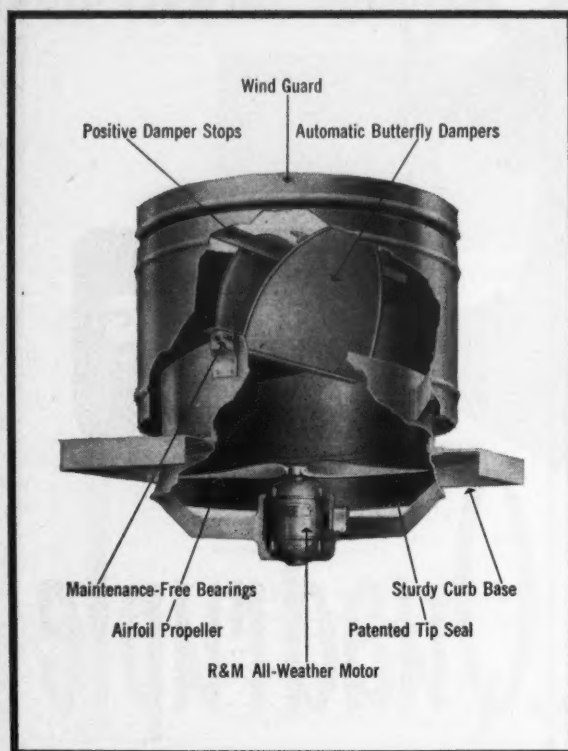
Chemical Milling and Processing Equipment



When inquiring check CP 3799 on handy form, pgs. 2-3

SKY-BLAST®

The Modern Power Roof Ventilator



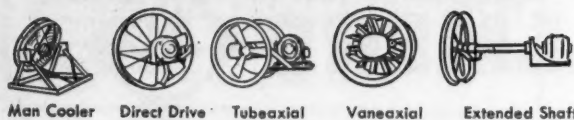
Most economical way to expel heat, fumes, smoke

This modern power roof ventilator is backed by 20 years of research and engineering.

Famed airfoil propeller, powered by the All-Weather Robbins & Myers motor, sweeps up heat, moisture, dust, fumes—then *blasts them high into the outside air*. Wind guard and throat design assure constant performance regardless of wind.

Automatic butterfly dampers open wide on minimum fan pressure for guide vane effect and virtually unrestricted air flow. Galvanized roof over damper shaft and bearing supports provides rainshed when fan is not operating. Easily mounted on any type roof, Sky-Blast provides air deliveries up to 78,800 CFM. Low silhouette cuts down roof stresses. Our engineers will be glad to give you free advice on any ventilating problem.

Write for Catalog 680-C.



Man Cooler Direct Drive Tubeaxial Vaneaxial Extended Shaft

When inquiring check CP 3800 on handy form, pgs. 2-3



Processing and Engineering Data



Properties of Domestic Woods

Comparative data based on clear wood

Prepared from Data Furnished
by ARROW TANK COMPANY, Buffalo, New York

	Weight — lb/cu ft (green) (12% moisture)	Bending strength	Compressive strength	Stiffness	Hardness	Shock Resistance	
HARDWOODS comparison figures							
Ash, commercial white	48	41	110	106	161	108	139
Basswood	41	26	61	62	126	31	54
Birch, yellow	57	43	106	98	174	86	171
Chestnut	55	30	68	70	112	50	69
Elm	54	36	85	74	130	66	123
Hickory	63	51	138	123	188	—	292
Maple	56	44	114	106	178	115	138
Oak, commercial red	64	44	101	92	168	103	139
Oak, commercial white	63	47	99	93	149	109	145
Poplar	38	28	71	68	135	40	58
SOFTWOODS comparison figures							
Cedar, Port Orford	36	29	82	90	168	48	79
Cedar, eastern red	37	33	67	87	80	81	114
Cedar, western red	27	23	60	74	108	38	52
Cedar, northern white	28	22	50	52	78	30	47
Cedar, southern white	26	23	53	61	93	35	51
Cypress	50	32	79	92	136	52	76
Douglas fir (coast)	38	34	90	107	181	59	81
Douglas fir (Rocky Mt.)	35	30	75	83	142	52	67
Fir, white	41	26	72	76	141	41	66
Hemlock, eastern	50	28	72	79	121	51	67
Hemlock, western	41	29	74	84	144	50	73
Pine, loblolly	54	38	93	104	166	62	93
Pine, longleaf	50	41	106	123	189	76	103
Pine, northern white	36	25	63	67	119	35	55
Pine, Norway	42	34	85	91	163	46	84
Pine, shortleaf	51	38	97	104	170	68	111
Pine, slash	56	48	116	126	195	93	105
Pine, sugar	51	25	64	68	112	38	55
Pine, western white	35	27	69	75	137	35	65
Pine, western yellow	45	28	65	69	112	41	58
Redwood	55	30	90	104	134	59	70
Spruce, Engelmann	39	23	55	57	100	32	45
Spruce, Sitka	33	28	72	75	144	44	76
Spruce, white	35	28	68	70	123	37	67
Probable variation in individual piece			12%	14%	18%	16%	20%

LEFAX POCKET SIZE TECHNICAL DATA BOOKS \$1. EACH

Printed on loose leaf, 6 hole, 6 3/4" x 3 3/4" bond paper, each book contains about 140 pages of technical data, presenting condensed, accurate and essential data for the student, engineer, technical worker and business man.

Architecture	Radio	Analytic
Home Heating	Television & FM	Chemistry
Illumination	Electricity, AC	Highway
Electrician's Data	Electricity, DC	Engineering
Builder's Data	AC Motors and	Mechanics of
Lumber Data	Generators	Materials
Air Conditioning	Transformers,	Power Trans.
General Math.	Relays, Meters	Mach'y.
Math. Tables	Hydraulics	Thermodynamic
Physics	Surveying	Tables and
Chemical Tables	Mech. Drawing	Charts
Metals	Machine Design	Phys. and
Gen'l. Chemistry	Machinists' Data	Thermody-
Reinforced	Piping Data	namic Data
Concrete	Surveying Tables	Phys. and Org.
Building	Trig-Log Tables	Chemistry
Construction	Metallurgy	

Write for FREE Catalogs (over 2000 listings). See for yourself how helpful LEFAX can be to you. Send \$1 for each book, or \$5 for any six books listed above, to:

LEFAX Dept. CHP 5 Philadelphia 7, Pa.

When inquiring check CP 3801 on handy form, pgs. 2-3

NO Drip ...STOPS CONDENSATION DRIP!



NO Drip PREVENTS RUST
in addition to stopping drip and keeping floors dry.

ANYONE CAN APPLY
Brush, trowel or spray NoDrip on tanks, condensers, suction lines, vats, pipes, walls, ceilings, etc. NoDrip adheres to metal, concrete, brick, plaster. It forms a seamless covering that is effective as soon as dry. Acid, alkali and brine resistant.

Interesting 32-page Handbook shows what NoDrip is and what it does. It's free. Send coupon today.

☐ SEND NO Drip HANDBOOK

NAME

COMPANY

ADDRESS

CITY STATE.....

J. W. MORTELL CO., 530 BURCH ST., KANKAKEE, ILLINOIS
TECHNICAL COATINGS SINCE 1895

When inquiring check CP 3802 on handy form, pgs. 2-3

SEPTEMBER, 1953

NEW LITERATURE

Condenser tube cleaning kit

Bulletin describes kit designed to apply protection against costly inlet end erosion, which frequently causes a condenser tube to fail within the first few inches of its length.

This method of prolonging tube life is said to insure removal of deposits, provide excellent protective adherence, and make certain protective coating is spread evenly on tube. It does the job quickly and efficiently in three simple steps using any labor available.

TCW Tube Kit bulletin is issued by Thomas C. Wilson, Inc., Dept. CP, 21-11 44th Ave., Long Island City, N. Y. When inquiring specify CP 3803 on handy Reader Service slip, pages 2 and 3.

Complete chemical line presented in 106 pages

Maker's entire line of chemical products — carbon blacks, rubber chemicals, stearates, driers, esters, plasticizers, vinyl stabilizers, fungicides and mildew-proofing agents, asphaltic mastics, rust preventives, synthetic waxes, factices, and specialty items — are descriptively presented in new catalog.

Sixth Edition is available on letterhead request to Witco Chemical Company, Dept. CP, 260 Madison Avenue, New York 16, New York.

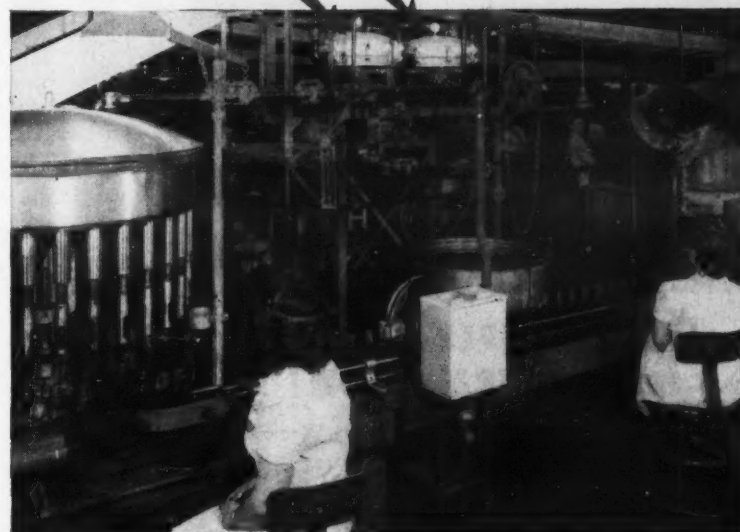
Insecticide posters in other languages

Wall posters in Spanish and Portuguese give detailed instructions for safe handling of the insecticide, parathion. The 2 by 3', illustrated posters will be useful to formulators who export the insecticide. They are translations of an English language version which has been available for over a year.

Issued by Organic Chemicals Division, Monsanto Chemical Company, Dept. CP, St. Louis, Mo. When inquiring specify CP 3804 on convenient Reader Service slip between pages two and three.

SPARKLER HORIZONTAL PLATE FILTERS

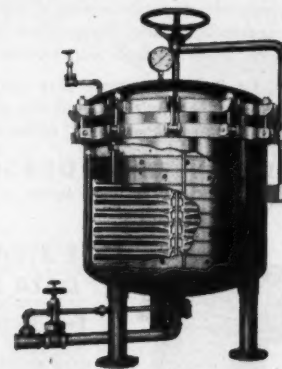
for final polishing of whiskey at the bottling line



THE two Sparkler filters shown here in one of the bottling lines at National Distillers give a safety filtering to the whiskey that practically eliminates discards due to fine specks or pipe line particles in the finished product.

By using two bottling line filters it is not necessary to shut-down production to clean filters. Either one of these filters can handle the required flow rate during the short time required to change the filter media on Sparkler horizontal filter plates. The cost of filter paper to re-dress the plates in these filters is very low and a complete change can be made and the filter back in operation in a few minutes.

Sparkler horizontal plate filters have become widely used in the production of whiskey for filtering at all stages because of their reliability for fine, consistent, never-degenerating quality, and low operating cost.



Write Mr. Eric Anderson for help on your filtration engineering problems and personal attention to your requirements.

SPARKLER

MANUFACTURING COMPANY

Mundelein, Illinois

SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

Sparkler International Ltd.
Prinsengracht 876,
Amsterdam, Holland

Sparkler Western Hemisphere Corp.
Mundelein, Ill., U.S.A.

Kamitter & Co.
35 Chitturajan Ave.,
Calcutta 12, India

MANUFACTURERS OF FINE FILTRATION EQUIPMENT FOR MORE THAN A QUARTER OF A CENTURY

When inquiring check CP 3805 on handy form, pgs. 2-3



UNIT HEATERS ALSO REQUIRE HELP FOR TOP PERFORMANCE



INSTALL SUPER-SILVERTOP STEAM TRAPS NOW!

Unit heater inefficiencies can't always be blamed on the heater itself. Heaters need help in order to operate at top performance. The faster the heater is freed of air, when turned on, the quicker it is brought to maximum temperature. And by draining condensate out of the core of the steam compartment at all times, the heater continues to operate at peak efficiency delivering heat at its maximum output. Super-Silvertops succeed where other traps fail because they are activated by water only, regardless of temperature. Presence of water causes the trap to discharge immediately, preventing corrosion by removing gases and condensate. Help your unit heaters to operate effectively. Install Super-Silvertops now.

To select the proper size trap for unit heaters of various capacities, send for a free copy of "Solving Steam Trap Problems" today. Write

THE V. D. ANDERSON COMPANY
1932 West 96th Street • Cleveland 2, Ohio



FREE STEAM TRAP DATA BOOK

This 36 page book contains complete data on the selection of proper size traps for unit heaters.



THE V. D. ANDERSON CO.
1932 West 96th Street • Cleveland 2, Ohio

GENTLEMEN: Please send without obligation a copy of "Solving Steam Trap Problems".

Name _____

Company _____

Address _____

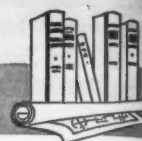
City _____ Zone _____ State _____

In Canada: Bowden Industries, Ltd., Toronto

When inquiring check CP 3806 on handy form, pgs. 2-3



Processing and Engineering Data



57

Sizing Pumps

By ROBERT HLAVIN Long Beach, Calif.

PUMP and pump-motor sizes can be determined by well known equations. The accompanying nomograph, however, provides quick, accurate solutions to the equation:

$$\text{BHP} = \frac{\Delta P \times \text{gpm}}{1713 \eta}$$

where —

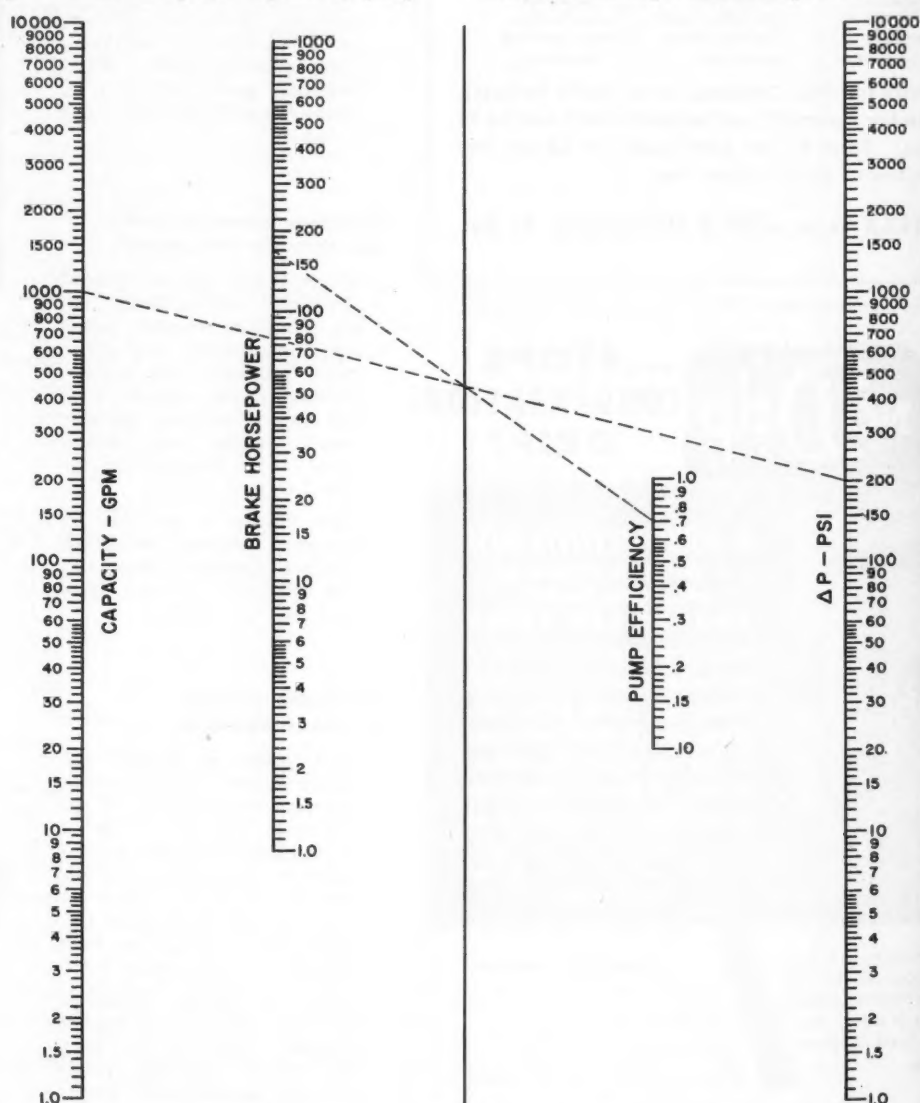
bhp = brake horsepower required by pump

gpm = capacity of pump in gallons per minute
 η = pump efficiency — actual hp/theoretical hp
 Δ = required pressure increase of liquid, psi

Typical Example

A pump is required to deliver 1000 gpm at 210 psig. Inlet pressure is 10 psig. Assuming 70% efficiency, what power will be required?

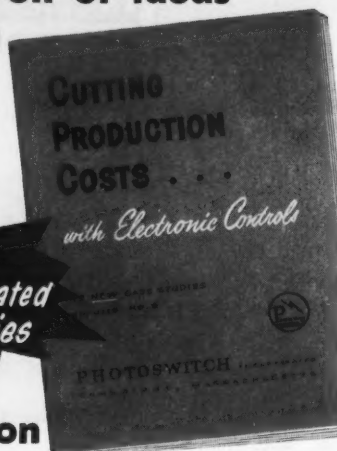
Net pressure increase across the pump is 200 psi. Connecting this with 1000 gpm on appropriate scales, an intersection point is found on the reference line. Straight line through this point and .7 on the efficiency scale intercepts brake horsepower scale at 170.



FREE! Full of ideas
for saving
with
**Electronic
Controls**

45
new illustrated
case studies

1953 Edition



A completely revised edition of the handbook that has become the "bible" of electronic control for thousands of engineers and production executives.

Newly edited, with 45 new case studies showing how standard packaged electronic controls have solved many industrial problems you're likely to meet. It explains clearly and factually, without hocus-pocus, tested ideas for achieving new efficiency through "Electron-eered" counting, weighing, measuring, timing and cycling.

SEND FOR YOUR COPY NOW!

PHOTOSWITCH INC.

Dept. CP 9, 77 Broadway, Cambridge 42, Mass.



When inquiring check CP 3807 on handy form, pgs. 2-3

SOLVE CORROSION PROBLEMS!

**Select HARPER
Everlasting
Fastenings**

Harper can supply corrosion-resistant fastenings to meet every need. Call Harper for bolts, nuts, screws, washers, rivets and special fastenings of brass, silicon bronze, naval bronze, Monel, aluminum, all stainless steels. Over 7,000 different items ready for prompt delivery. See your Harper Branch or Distributor or write for catalog.

HARPER
EVERLASTING FASTENINGS

The H. M. Harper Company
8241 Lehigh Avenue
Morton Grove, Illinois
Please send me Harper Catalog 25.

Name.....
Company.....
Address.....
City.....State.....

When inquiring check CP 3808 on handy form, pgs. 2-3

NEW LITERATURE

Bulk system packs 20 tons per hour

Bulletin describes company's bulk packing and handling system. In this system, chemicals and food products are packed in giant cardboard boxes at rates up to 20 tons per hour.

Complete operation of system from loading to finished package is detailed. Photos and drawings illustrate text. Automatic scales used in system are also discussed. (6 pages, 2 colors)

Bul 0153 is issued by Richardson Scale Co., Dept. CP, Clifton, N. J. When inquiring specify CP 3809 on handy form, pages 2 and 3.

Tractor-type shovel is described

Two-color literature describes construction and industrial uses of manufacturer's tractor-type loading shovel. Literature illustrates applications and attachments for the front-end loader, lists specifications of the equipment and describes performance characteristics.

Literature describing the Shovel-loader is issued by the Baker-Lull Mfg. Co., Dept. CP, 314 W. 90th St., Minneapolis, Minn. When inquiring specify CP 3810 on handy form, pages 2 and 3.

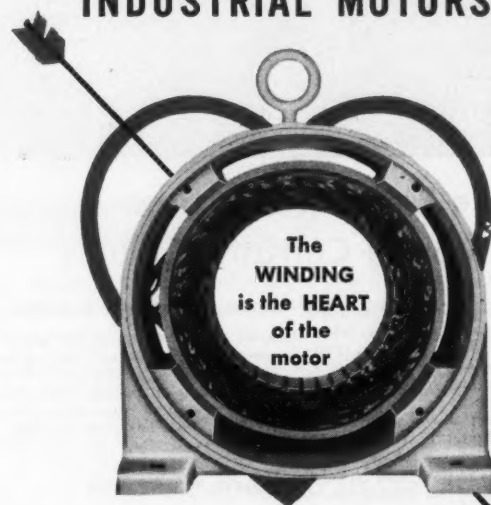
Shows humidity meters printed on paper

Four-page, black and white folder shows several humidity indicating papers as used in various industries. In most cases, series of spots printed on absorbent, heavy paper indicate relative humidity in the range 10 to 70%. Special indicators are also made to indicate changes about some definite point such as 30% humidity, 50% humidity, etc.

Humigraph folder is issued by Andrew Technical Service, Dept. CP, 3805 N. Clark St., Chicago 13, Ill. When inquiring specify CP 3811 on convenient Reader Service slip between pages two and three.

ELECTRO *xtra* DYNAMIC *dependable*

INDUSTRIAL MOTORS

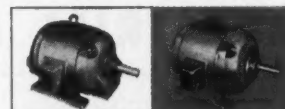


Every Electro Dynamic motor is built with
EXTRA INSULATION in stator slots and between phases
EXTRA IMPREGNATIONS and bakings of the
wound stator
EXTRA HIGH-FREQUENCY TESTING
of insulation between turns

WRITE TODAY FOR
CATALOGUE
NO. 975

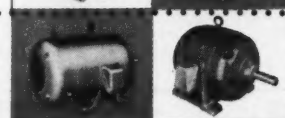
From 1 to 250 Horsepower (N. E. M. A. STANDARDS)

One-piece
cast iron
frames.



Extra large
"free-flo" air
channels.

Permanently
aligned cast
iron brackets.



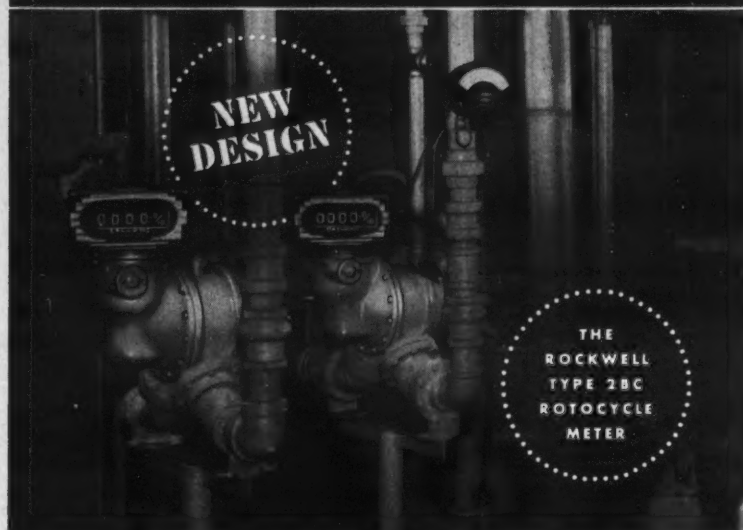
Liberal size
grease lubri-
cated bearings.

Also a complete line of Direct Current motors and generators

ELECTRO DYNAMIC
DIVISION OF GENERAL DYNAMICS CORPORATION
BAYONNE, NEW JERSEY

When inquiring check CP 3812 on handy form, pgs. 2-3

NOW AN ALL-STAINLESS STEEL METER



Solves the Problem of Measuring Corrosive Liquids

Here's a meter specifically designed for accuracy and long life when measuring corrosive liquids common to the chemical, petro-chemical, food, pharmaceutical and industrial processing fields.

Constructed *inside and out* of stainless steel this meter is designed to operate under a maximum working pressure of 125 psi, and has a maximum capacity of 100 gpm.—20 gpm minimum.

The Rockwell Type 2BC Roto-cycle meter provides accurate records of liquids handled which are so important to quality control when blending and batching—to inventory controls—to accounting and tax analyses.

QUANTITY CONTROL REGISTER

As an added convenience this meter can be equipped with a Quantity Control Register having a built-in electric switch to control relays, solenoids, pumps, valves, etc. The switch is actuated after a predetermined volume of liquid has been measured.

REMOTE REGISTRATION

The Rockwell Remote Registration Unit can be provided to transfer the reading of the 2BC meter by electric impulses direct to a central control room remotely located from the point where actual measurement takes place.

Write for bulletin OG-403



You Can RELY ON ROCKWELL

INDUSTRIAL METERS

CLIP COUPON—MAIL TODAY

A 5310A

ROCKWELL MANUFACTURING COMPANY
Pittsburgh 8, Pa.

Gentlemen:

I am interested in measuring _____ (Name of Liquid)

with your 2BC Stainless Steel Meter.

Pipe Size _____" Working Pressure _____ psi Temperature _____°F max.
Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 3813 on handy form, pgs. 2-3

NEW LITERATURE

Water conditioning for boiler, process, and general use

Comprehensive data on methods of conditioning water for boiler, process, and general use are given in 20-page bulletin. It features zeolite water softener of "double-check" design which is said to deliver up to 44% greater capacity and guard against costly loss of zeolite. Various units described in the bulletin are available for manual or automatic operation.

Bulletin tells how to make any water softener deliver from 3 to 10 times more soft water. It describes deionizer of single-tank design which is said to produce water of highest chemical purity at a fraction of distillation or evaporation cost. Chemical feed, zeolite-post treatment, zeolite-alkalinity neutralization, split-stream, and anion exchange dealkalization systems for boiler, process, and general water conditioning purposes are covered in publication.

Also included are data on filters, purifiers, degasitors, zeolites, ion-exchange resins, and water treatments for all purposes.

Bul 611A is available to readers on letterhead request to Elgin Softener Corporation, Department CP, Elgin, Illinois.

Quick reference on maintenance for instrument men

Illustrated, 24-page manual describes application, installation, and construction of indicating flow meter. Manual also explains principles of orifice metering and illustrates orifice flanges recommended for use with this instrument. Instrument itself can be used with air, oil, gas, water, etc.

Proper procedure for installation in liquid, steam and gas lines is detailed in line drawings. Written for those who install and maintain instruments, manual provides a handy, quick-reference.

Manual for Model A-286, Type H Indicating Flow Meter is issued on letterhead request to Meriam Instrument Co., Dept. CP, 10920 Madison Ave., Cleveland, Ohio.

Offer two new safety films — especially for supervisors

Folders describing two new safety films also contain order information and blanks. The one production is entitled "A Gray Day for O'Grady" and is about a foreman who almost loses his chance for promotion because of his attitude of selling safety short. This film is available for rental as 35 mm sound slidefilm and 16 mm sound motion film.

Other production is entitled "Pick Your Safety Target" and shows foremen how to make sense out of the evidence of accident reports. It gives a system for classifying accidents, interpreting the facts and translating them into action. Folders

KNIGHT-WARE
CHEMICAL EQUIPMENT



PIPING for CORROSIVE SERVICE

The unit illustrated above is a Knight-Ware Fume Collector Assembly. Along with Knight-Ware Corrosion-Proof Ductwork, fittings and fan adapter, it was installed to remove noxious fumes from a large industrial laboratory.

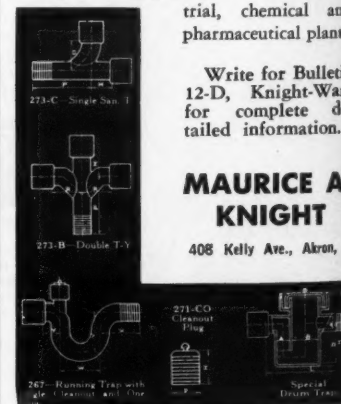
Knight-Ware is a tough ceramic made especially for handling corrosives. It is corrosion-proof throughout against acids, alkalis, and other corrosives. No expensive molds are required in its manufacture; hence, special designs can be fabricated at relatively low cost.

Knight-Ware pipe, sinks, sumps, fume ducts, etc., can be installed by any competent plumber. Knight-Ware is widely used in colleges, hospitals, laboratories and publishing plants, as well as industrial, chemical and pharmaceutical plants.

Write for Bulletin 12-D, Knight-Ware for complete detailed information.

MAURICE A. KNIGHT

408 Kelly Ave., Akron, O.



When inquiring check CP 3814 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

on these two films are available from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 3815 on handy form, pages 2 and 3.

Synthetic Glycerine

(Continued from page 7)

was again faced with the problem of competing in a wildly fluctuating market. Jan Oostermeyer, who recently retired from the presidency of Shell Chemical Corporation, was convinced that glycerine at a reasonable, stable price could be sold to large chemical users. His idea proved to be well founded, and he and L. V. Steck, who had meanwhile become marketing vice-president of Shell Chemical, found support with numerous chemical companies. It was decided to build a plant. Under the direction of Martin Buck, manager of development, and L. M. Roberts, manager of engineering, construction was started at Houston. Commercial production of synthetic glycerine became a reality late in 1948 when the plant went on stream under the direction of B. M. Downey.

Shell's total investment in synthetic glycerine by that time must have been somewhere above 12 million dollars. Subsequently, the Houston plant has been expanded and now produces over one-fifth of the U.S. glycerine supply. Furthermore, after the war, a free glycerine market resulted in new chemical uses, tending to develop a demand which only additional production could have met.

In view of the continuing trend toward synthetic detergents and the consequent diminishing supply of "natural" glycerine from soap manufacture, we can expect to see an enlargement of petrochemical production of glycerine. And for both our assured peacetime supply of this important chemical commodity, and our insurance against shortages during national emergencies, we must thank the men of the Shell companies who have thus established another milestone in chemical technology.

Procurement Standards

(Continued from page 5)

then incorporate it into his specifications, wholly, in part, or with exceptions.

Let us not for one moment labor under the delusion that standards may have wrapped up within themselves all the answers to the problems of specifications, design, manufacture, procurement, and use. Let us not assume that the wizardry of the standards engineer has given us punch-card designs with which it is only necessary to engage in a little haphazard button-pushing to cause a modern production unit to emerge from our plant site. Rather, let us look upon them as engineering tools for industry — tools to be judiciously selected and skillfully used by the competent engineer to perform the many jobs for which they have been specifically adapted.

seating surfaces stay

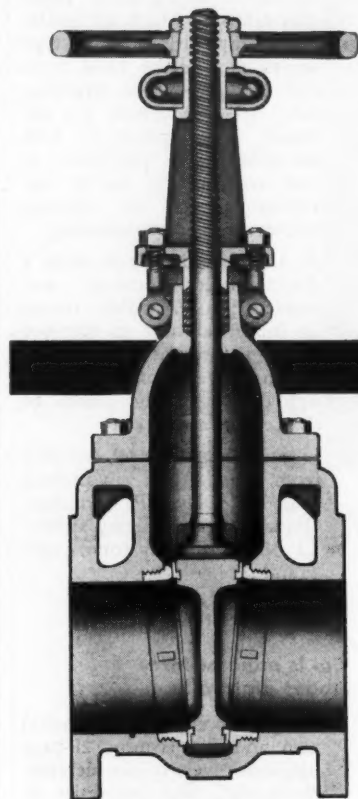
Slick as a Whistle



...in CRANE 18-8 Mo ALLOY TRIMMED ALLOY CAST IRON GATE VALVES

This is the valve that cancels out seating surface corrosion economically in many piping processes. Its seats, disc, and stem are Crane 18-8 Mo alloy steel—an exceptionally high-grade stainless steel, highly resistant to most corrosive fluids.

NOW IN SIZES UP TO 18 INCHES



Cross-Section No. 14477
Crane Alloy Cast Iron Wedge Gate
18-8 Mo Alloy Trimmed
Flanged Ends

WORKING PRESSURES: 200 pounds
cold water, oil, or gas, non-shock.
Sizes: 2, 2½, 3, 4, 6, 8, 10,
12, 14, 16 and 18 in.

You'll recognize this valve pattern. It's the same as the famous Crane all-iron wedge gate, with the same liberal metal sections for maximum strength, and with tie-ribs on bonnet and end flanges for extra resistance to line strains. The big difference in these No. 14477 valves is: the body and bonnet are nickel low alloy cast iron, having much better physical properties and corrosion resistance than ordinary cast iron.

TYPICAL APPLICATIONS

In the *Petroleum* industry, these valves are giving outstanding service on oils with traces of mineral acids . . . in *Wood Treating*, on creosote vapors and oils . . . in *Pulp and Paper* processing, on alkaline liquors of various kinds. In fact, No. 14477 valves are ideal for mildly corrosive services where all-iron valves are inadequate but where it is uneconomical to use all-stainless steel valves.

A new circular on No. 14477 gives complete specifications and lists new sizes available. Write direct, or ask your Crane Representative for a copy.

THE BETTER QUALITY... BIGGER VALUE LINE... IN BRASS, STEEL, IRON

CRANE VALVES

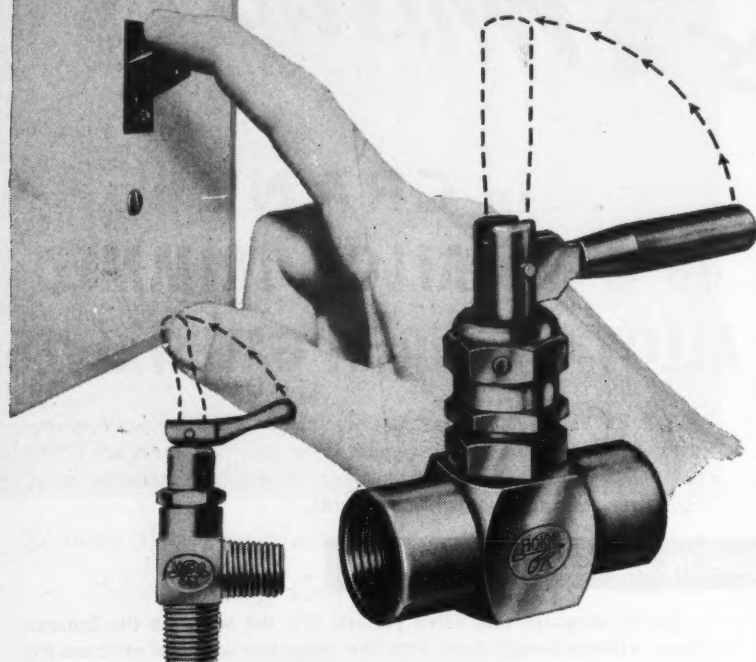
CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 3816 on handy form, pgs. 2-3



FOR Fingertip FLUID CONTROL



HOKE TOGGLE VALVES

Opened or closed with a single, positive motion—like a light switch—these HOKE toggle valves will improve the design of your instrument panel or test stand. Use them to control gas or liquid, at pressures up to 1000 psi or in high vacuum, with no leakage through stem or seat. They are available in $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " sizes, in brass or stainless steel. The seat material, normally synthetic rubber, may be altered to meet specific conditions. Both straight line and angle type are ideal for instrument panel installation and can be mounted easily and securely with a lock nut. Several types are available with plastic knobs of various colors, for quick identification of fluids. For fingertip fluid control—for time-saving, dependable, efficient performance—specify HOKE Toggle Valves. Write Hoke Inc., 145 S. Dean St., Englewood, N.J., for Catalog & Data Sheets.

HOKE

**HOKE
INCORPORATED**
Fluid Control Specialists
ENGLEWOOD, NEW JERSEY

When inquiring check CP 3817 on handy form, pgs. 2-3

NEW LITERATURE

Lighting portfolio offered

Five 8-page booklets and one 4-page folder are included in portfolio covering lighting for offices, schools, stores, and factory areas. Material includes engineering and installation data, and is illustrated by photographs.

Four booklets deal with four types of equipment of the luminous ceiling family with rigid-arch swing-down Plexiglas diffusers which are modular in application. Each type serves a different need from full integration of illumination, noise reduction, air diffusion, and sprinklers with movable metal partitions in new construction to an on-surface version for lighting exclusively for modernizing.

A fifth booklet deals with a direct-indirect louvered suspended fixture. Folder covers an industrial unit to improve visual environment in plants by an upward component of light to dispel the gloom of the ceiling area.

Lighting portfolio is available from The F. W. Wakefield Brass Co., Dept. CP, Vermilion, Ohio. When inquiring specify CP 3818 on handy form, pages 2 and 3.

Bul is mine of info about diatomite

Designed both for the technical man and the layman, 28-page brochure covers origin, development, uses, and properties of diatomaceous silica and products made from it. First two sections of the heavily illustrated booklet tell how the deposits formed and of the experiments leading to today's uses.

Succeeding sections describe current benefits of diatomite as a filter aid, a mineral filler in production of paint, plastics, paper, fertilizers, and insecticides; a high temperature insulation; and a catalyst carrier.

"Celite — The Story of Diatomite," is issued by Johns-Manville, Dept. CP, 22 E. 40th St., New York 16, N. Y. When inquiring specify CP 3819 on handy form, pages 2 and 3.

Edward
PRESENTS

**New ALL-PURPOSE
STEEL VALVES**



A new all-purpose valve series, ideal for almost any service where small O. S. & Y. steel valves are used.

Drop forged steel for greatest strength... simplest packing arrangement... tight, easily accessible union or bolted bonnet joints... bronze yoke bushings... microscopically mated seats and disks... lock welded parts. Built in sizes $\frac{1}{4}$ to 2 in. inclusive, globe or angle, screwed or socket welding ends, carbon or chromium molybdenum steels, in 600 or 1500 lbsp classes. Stocks now available.

Bolted bonnet 1- $\frac{1}{4}$ in. up 600 lb, 1 in. up 1500 lb. Union bonnet in smaller sizes.

For full details, dimensions, illustrations write today for your free copy of . . . **BULLETIN 501**

Another  Product
Edward Valves, Inc.
Subsidiary of ROCKWELL MANUFACTURING COMPANY
1230 West 144th Street, EAST CHICAGO, INDIANA
When inquiring check CP 3820 on handy form, pgs. 2-3

"Easy to install...
Easy to operate...
Easy on the fuel!"



AMESTEAM GENERATOR



- A complete unit, piped and wired, ready for service connections.
- Needs no special foundation or expensive stack.
- Fully automatic... attention-free.
- 80% efficiency means real fuel savings.
- Easy to clean and service... all parts accessible.

20 SIZES — 10 to 600 h.p. —
15 to 200# OIL OR GAS

FREE BULLETIN!
WRITE FOR YOUR COPY
Complete engineering facts on the exact AMESTEAM GENERATOR to do your job and save you money. Write today!

AMES IRON WORKS
BOX B-93 OSWEGO, N. Y.

When inquiring check CP 3821 on handy form, pgs. 2-3

Construction and spec features of small, V-type engines

Eight-page, two-color bulletin contains construction and operating data on manufacturer's four-cycle V-type stationary or marine engines. These 13" bore and 16½" stroke engines, as described in bulletin, are built to meet demand for a high power, heavy duty diesel, Dualfuel, or spark-fired gas engine of moderate weight and small dimensions. Specifications present weight and ratings of both the 12 and 16 cylinder engines which cover a horsepower range from 2400 to 4260 at 450 to 600 rpm.

Information is also included on pressure lubricating system and fuel systems for oil and/or gas operation. A schematic cross section shows design and compact arrangements of engine and all principal parts are identified. Dimensional line drawings for stationary and marine engine types are also presented.

Bul 197 is available from Nordberg Mfg. Co., Dept. CP, Chase and Oklahoma Aves., Milwaukee 7, Wis. When inquiring specify CP 3822 on handy form, pages 2 and 3.

Two-step vs five-step analysis — nephelometry can do it

Comparison of nephelometric and gravimetric methods of analysis shows that the former requires only preparation of sample by dissolving and subsequent precipitation whereas the gravimetric procedure requires five additional steps prior to final measurement. Filtration, washing, drying, cooling, and weighing can be dispensed with when using the nephelometric method.

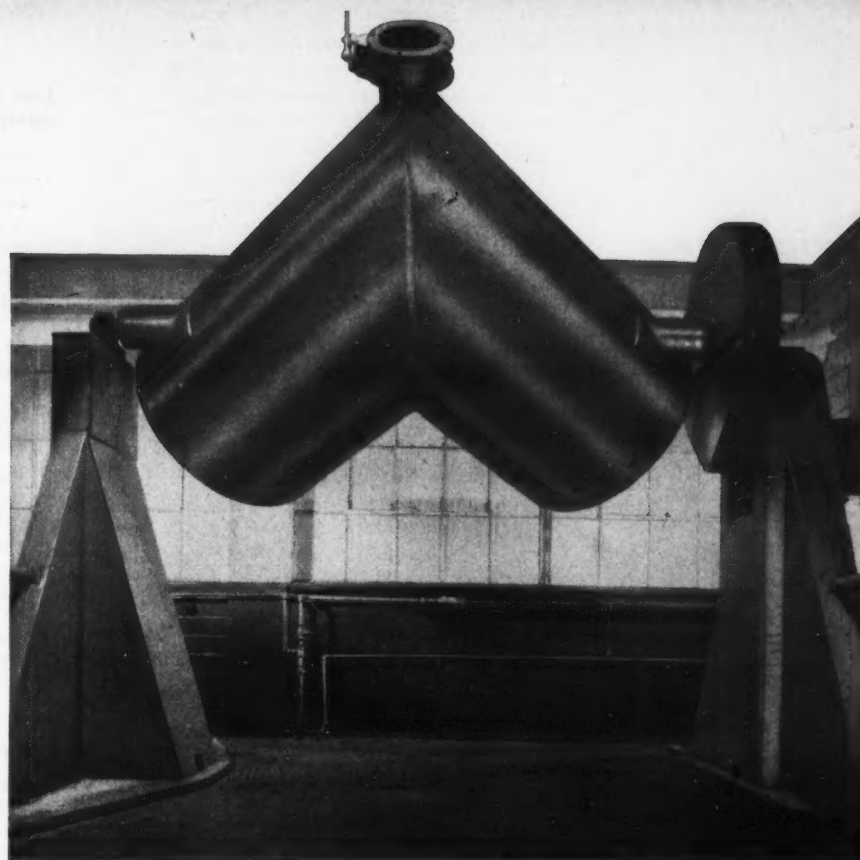
Manufacturer's Nephelos System — precision photoelectric instrument and a set of nephelometric standards — provides the necessary equipment for this time-saving method of analysis. Features and description of the equipment are contained in factual bulletin.

Bul B-226 is issued by Coleman Instruments, Inc., Dept. CP, 318 Madison St., Maywood, Ill. When inquiring specify CP 3823 on handy form, pages 2 and 3.

Describes series of thermometers in stainless steel

Four-page bulletin describes stainless steel, dial-type thermometers designed to show Fahrenheit and Centigrade temperature on 5, 3, or 2¼" diameter dial. Instruments are made of type 304 stainless, can also be supplied with acid-resistant coating on stem. Bulletin shows typical scales, and tabulates available range and stem lengths.

Bul 3 is issued by W. C. Dillon & Co., Inc., Dept. CP, 14620 Keswick St., Van Nuys, Calif. When inquiring specify CP 3824 on handy form, pages 2 and 3.



Abbott
Laboratories

PRECISION-BLEND vitamins and drugs with p-k twin shell dry blenders

Famed Abbott Laboratories, Chicago, depend upon the p-k twin shell dry blenders alone to *precision-blend* important prescriptions.

Small amounts of vitamins and potent drugs must be completely and uniformly dispersed within the larger quantities of inactive materials which form the bulk of any dosage. No other blender has proved as dependable, effective and rapid as the p-k twin shell dry blender in this work.

Previous mixing methods caused variable assays in a large percentage of batches, requiring expensive re-handling. With p-k twin shell blenders, mixing time has been cut in half and no re-mixing has ever been required. Complete blending of a 75 cu. ft. working load is done in 5 to 10 minutes without danger of over-blending.

The application of p-k twin shell dry blenders to your processes can assure *precision-blending*—effectively, quickly and at lower cost. It will pay you to ask p-k for blending tests on your materials and for engineering assistance at the initial planning stage, at no obligation or cost. Since p-k also makes double-cone and ribbon blenders, an unbiased analysis of your blending methods is assured. Or, write for factual literature—Catalog No. 12



the **Patterson-Kelley Co., inc.**

790 Lackawanna Ave., East Stroudsburg, Penn.

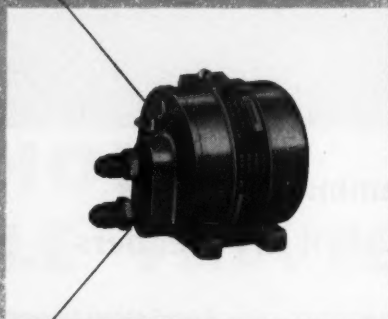
101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities

When inquiring check CP 3825 on handy form, pgs. 2-3

PRESSURE INSTRUMENTS

Giannini instruments for low pressure measurement and control utilize precision potentiometer elements to translate pressure signals into proportional electrical signals (20-50 volts) requiring little or no amplification. Models are available with single or multiple outputs and can be linear with airspeed, altitude, pressure, or to natural or empirical functions. ■ Over twenty separate and distinct types of proven capsule-powered transducers and switches are obtainable for applications requiring precise measurements of absolute, differential, or gage pressures, in ranges from ± 0.5 psi diff. to 0-150 psi. ■ Instruments are available to operate under either normal military environmental conditions or under conditions of high acceleration, severe shock, and extreme vibration. *G. M. Giannini & Co. Inc. also manufactures a complete line of high pressure instruments. Write for catalog.*

MODEL 45176 illustrated 0-1 to 0-150 psi abs. diff. gage. Size 2.83 in. dia. x 3 in. weight 15 oz. max.



MODEL 45177

Up to 4 outputs and inputs in ranges 0-1 to 0-150 psi abs. diff. or gage. (Set of 2 model 45176).



MODEL 45154

Ranges 0-5 to 0-30 psi abs. Size 2.25 in. dia. x 2.48 in. weight 8 oz. max.



MODEL 45172

Ranges 0-10 to 0-30 psi abs. diff. or gage. Size 2.19 in. x 2.83 in. weight 15 oz. max.



Giannini

G. M. GIANNINI & CO., INC. • PASADENA 15, CALIF. • EAST ORANGE, NEW JERSEY

When inquiring check CP 3826 on handy form, pgs. 2-3

NEW LITERATURE

Low rating of hydraulic pumps is 50 hp

Literature describes line of large capacity oil hydraulic pumps and motors of which the lowest power rating is 50 hp. Performance data and drawings are presented featuring the heavy duty series of positive displacement axial piston type pumps and motors.

Units are available in 10 sizes with capacities of 28 to 2300 gpm at rated speeds, and 50 to 4000 hp in the pressure range of 2000 to 3000 psi.

Pumps and motors are suitable for either open or closed hydraulic circuits. They are reported to be particularly adapted to heavy machinery drives requiring precise control of torque, acceleration and deceleration, speed or reversal. Hydraulic motors of this series are said to have the ability to reverse quickly under full load, and to run at extremely low speeds under full torque.

Data book on heavy duty hydraulic pumps and motors is issued by Commercial Hydraulic Dept., Waterbury Tool, Division of Vickers, Inc., Dept. CP, Waterbury, Conn. When inquiring specify CP 3827 on handy form, pages 2 and 3.

Contains specs on insecticide

Booklet describes sulfoxide-pyrethrins insecticide formulations. Specifications on the synergist, Sulfox-cide(R), are given, as well as specifications on many sulfoxide-pyrethrins concentrates. Sections are devoted to Sulfoxide-Pyrexel 20, an oil solution; Sulfoxide-Pyrexel 1-10, an emulsifiable concentrate; and Pyrexel wettable powder, a powder which is impregnated with sulfoxide-pyrethrins.

Also included is information on formulations and applications of the insecticide. Sulfox-cide is said to have a pleasant odor and a low order of toxicity.

Booklet on Sulfox-cide(R) is issued by S. B. Penick and Co., Dept. CP, 50 Church St., New York 8, N. Y. When inquiring specify CP 3828, pgs. 2 & 3.

Here are the
answers on

R/M Teflon*

Packings & Gaskets



The new catalog on R/M Teflon Products lists the diversified line of Teflon packings, gaskets, rods, sheets, tubes, tapes and fabricated parts now being made by Raybestos-Manhattan. These materials are inert chemically except with molten alkali metals and with fluorine gas or chlorine trifluoride, both at high temperatures. They are ideal for sealing pumps, valves, flanges, handholes, manholes, covers and other movable parts in chemical equipment. Write for your copy of this new catalog today.

*Du Pont trade-mark for its tetrafluoroethylene resin



PACKINGS

RAYBESTOS-MANHATTAN, INC.
PACKING DIVISION, MANHEIM, PA.

When inquiring check CP 3829 on handy form, pgs. 2-3

BRIEFS...

*from contemporary
publications*

READ THEM . . . IN THIS ISSUE

You get a "quick look" at the most valuable articles being published in this field, and kindred fields . . . by reading the "BRIEFS" section of **CHEMICAL PROCESSING** every month.

Our Editors read more than 50 contemporary publications every month . . . select those articles they believe you will want to know about . . . and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service . . . to save you time . . . yet keep you informed. See "BRIEFS" in this issue, page 160.

Five additions to company's line of friction & hydraulic drives

Sixteen-page, two-color bulletin serves to introduce five additions to company's line of friction and hydraulic drives for powered equipment.

These drives include: 1) a two-stage hydraulic torque converter, to fill the gap in industrial hydraulic drives; 2) a two-speed transmission, to obtain extended full-range performance from three-stage torque converters; 3) a disconnecting hydraulic power take-off, to provide a higher capacity, more compact disconnecting fluid drive for powered equipment; 4) an air-actuated clutch, offering lighter weight and more narrow clutch width with higher torque capacity; and 5) an oil-actuated multiple plate clutch, incorporating an integral cylinder to eliminate adjustment and provide constant torque capacity, more compactness, and longer wear life.

"New Products" issue of Production Road is available from Twin Disc Clutch Co., Dept. CP, 1361 Racine St., Racine, Wis. When inquiring specify CP 3830 on handy form, pages 2 and 3.

Summarizes research projects at 103 engineering schools

Approximately 7500 research projects being carried on at 103 engineering schools are outlined in 330-page bulletin. All branches of engineering and most related fields are covered in the contents and approximately 5000 index entries. Other information contained in the book (in addition to current research project titles): names of responsible administrative officers, policies which govern research projects and contracts, personnel engaged in research activities, annual expenditures for research projects, sources of income for research, and special short courses and conferences of interest to research workers.

To obtain "Review of Current Research and Directory of Member Institutions — 1953" remit \$2.50 direct to Secretary, Engineering College Research Council, 103 Mechanical Engineering, The Pennsylvania State College, State College, Pa.

Shows numerous thermometers, both chart and dial

Printed in two colors, 8-page bulletin pictures many available types of dial and chart thermometers. Of particular interest are small recording thermometers with spring motors whose charts cover long intervals (typical is a 12-day chart). Booklet also illustrates and describes accessories, available scales and charts, mounting methods, and dimensions.

Bul G-158 is issued by Instrument and Gauge Div., The Electric Auto-Lite Co., Dept. CP, Toledo 1, Ohio. When inquiring specify CP 3831 on handy form, pages 2 and 3.

What it takes to make a 3000 Degree Refractory Concrete



Because of the widespread interest in the use of refractory castables, many furnace operators have asked us for the story behind the performance of B&W's unique refractory concrete, Kaocast.

Here are the answers to some of the most frequently asked questions:

Q. When you refer to Kaocast as a 3000 degree refractory castable, do you mean that its melting point is 3000° F?

A. No, this means that its service use limit is 3000° F; its melting point is 200 degrees higher.

Q. Just what does it take to make a 3000 degree refractory castable like B&W Kaocast?

A. Let's first define a few terms. Refractory castables are made with granular materials which are volume stable at high temperatures and which can undergo repeated heating and cooling cycles without disintegration. These materials, known as refractory calcines or grogs, are blended with suitable hydraulic binders. The initial strength of a refractory castable is thus developed in the same manner as that of ordinary concrete—that is, through the chemical action between water

and the binder. A strong ceramic bond is formed when the refractory castable is subjected to temperatures above the vitrification point.

Q. Then you have a grog, a binder and a method of putting them together. Which is most important?

A. You can't say that any one is most important. It's a combination of all three. Let's take them one at a time. Our grog consists primarily of the proper blend of kaolin and other alumina-silica materials. This ratio enables us to achieve a grog with minimum expansion and shrinkage, a high fusion point, and greater stability under load, at varying temperatures.

Q. And now, what about the binder?

A. There are a number of factors responsible for the success of the Kaocast binder. One is the compound Tricalcium Penta-aluminate (3 lime to 5 alumina). This formula produces the most refractory compound (highest melting point) that can be made from lime and alumina. Another is that by using the purest commercially available lime and alumina, the Kaocast binder is substantially free of iron and silica. Such traces of these that are present combine during the pre-

firing of the binder to produce stable compounds.

Q. Just how important is the manufacturing or "blending" of the grog and the binder?

A. If one factor could be singled out as "most important" it would be quality control.

Direct control over the fineness of materials, pre-firing temperatures, and other phases of manufacture is possible at B&W because both the grog and the binder are made and blended at B&W's Augusta Works—under B&W's direct control and supervision.

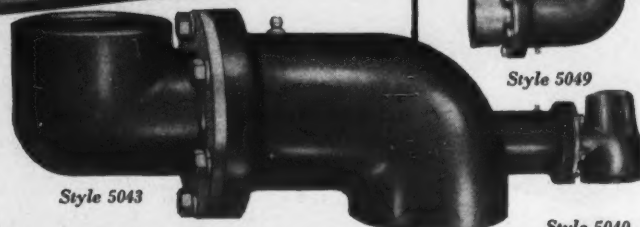
Q. These factors you've discussed must add up to some specific advantages of Kaocast. What are they?

A. B&W Kaocast has all the advantages of easy installation which are responsible for the widespread interest in refractory concretes, plus these exclusive features: It is the only 3000 degree refractory concrete with high resistance to spalling and low volume change throughout its operating range.

THE BABCOCK & WILCOX CO.
Refractories Division
General Offices:
161 East 42nd St., New York 17, N. Y.
Works: Augusta, Ga.

When inquiring check CP 3832 on handy form, pgs. 2-3

BARCO SWING JOINTS



Style 5043

FOR LOADING AND UNLOADING LINES

BARCO'S new, attractively priced, all-steel ball bearing *Swing Joints* are designed specifically to provide for movement and flexibility in metal pipe loading or unloading lines handling petro-chemicals, oil, alcohol, and other fluids.

MANY STYLES—The Barco line is complete with single swing, double swing, and counter-balance styles to meet every need! Sizes 2", 2½", 3", 4".

BALL BEARING AND O-RING EQUIPPED—In Barco Swing Joints, the ball bearings do not fall out when joints are taken apart! Long bearing provides adequate pipe support. *Special O-ring seal eliminates frequent gasket replacement and insures leakproof service* over wide temperature range, -40° F. to +225° F.

SIMPLE CONSTRUCTION—Joints can be disassembled for inspection without disconnecting piping. O-rings are easily renewable in the field.

ENGINEERING RECOMMENDATION—Barco will be glad to give you detailed recommendations on joints to use and suggested arrangements for complete loading and unloading assemblies.



NEW!

Send for a copy of new Catalog No. 400 containing complete information on Barco Swing Joints. **BARCO MANUFACTURING CO., 537K Hough St., Barrington, Ill. (A Chicago Suburb)**

BARCO—The Only Truly Complete Line of Flexible Ball, Swivel, Swing, and Revolving Joints

When inquiring check CP 3833 on handy form, pgs. 2-3



Style 5041

Style 5047

Style 5042

Style 5049

Style 5040

Style 5044

Style 5045

Style 5048

Style 5050

Style 5046

NEW LITERATURE

Shows three functions of lubricant in valves

Comprehensive 12-page bulletin describes lubricants, lubricant fittings, and lubrication methods for company's valves. Feature of bulletin is an illustrated outline of three functions of a lubricant in valves — lubrication of seat, provision of an impervious seal around each port under pressure, and provision of hydraulic means suitable for lifting plug from its tapered seat.

Accompanying this outline is a description of three styles of lubricant grooving used in manufacturer's valves. All three are illustrated with phantom exploded views of valves.

Three major types of lubricant are described. Their functions are listed in detail. A "selection chart" is also offered showing which lubricants are recommended for use with a variety of fluids. Various lube fittings and accessories, and lubing units are included to round out the text's information.

Bul V-220 is issued by Rockwell Mfg. Co., Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. When inquiring specify CP 3834 on handy form, pages 2 and 3.

Automatic weighing scales described in 8 pages

Complete line of manufacturer's Transportometer continuous automatic weighing scales is described in illustrated 8-page bulletin.

Line is used for accurate, precise control of production input and output by automatic, continuous weighing in transit of raw, intermediate, and finished materials and products. There is no inherent error in its design, manufacturer reports. Photos, drawings and dimensional tables in the bulletin are included to show installation of the unit on new or existing belt conveyors.

Bul 301 is issued by the Transportometer Div., Sintering Machinery Corp., Dept. CP, Sinter Ave., Netcong, N. J. When inquiring specify CP 3835 on handy form, pages 2 and 3.

Facts about Magnetic Separation and how it Pays Off



Send for BULLETIN 46

Here is full information on how FRANTZ Electromagnetic FERROFILTERS, for the process industries, remove iron contamination from liquid suspensions in all viscosities, as well as powdered and granular materials. This new bulletin provides operating and installation data on the FRANTZ line of magnetic separators with tables of sizes and capacities to help you select the proper type for your specific application. Send for your copy today.



S. G. FRANTZ CO., Inc.
P. O. Box 1138
Trenton 6, N. J.

Magnetic Separators



GRAVITY



PIPELINE



UNDERFEED



DRY, VIBRATOR

When inquiring check CP 3836 on handy form, pgs. 2-3

Kleenslot VIBRATOR SCREENS

They can be DESIGNED AND ADAPTED TO FIT ANY MAKE OF VIBRATOR. Perfect separation on wet or dry screening. Accurate performance on hundreds of installations.



HERE'S
HOW IT'S
DONE

Cross section at left shows how KLEENSLOT Screens operate on a non-clogging principle.

Kleenslot SCREEN GUARDS

The screen guard is built into the screen and the guard bars permit only the finer particles to pass over the screen. All sizes and most materials furnished.

SEND FOR
OUR
ILLUSTRATED
CATALOG

Wedge-Wire
CORPORATION

5610 CLARK AVE. CLEVELAND 2, OHIO

When inquiring check CP 3837 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Non-lubricating fluids, semi-fluids handled by screw pumps

Six-page folder pictures and describes external gear and bearing, bracket-type screw pumps. Units are for pumping non-lubricating fluids and semi-fluids, in the viscosity range from 32 to 1,000,000 SSU, such as fuel oils, crude oils, cellulose, acetates, distillates, water, and similar products.

Units are center line supported with single point alignment and radial and axial control. They have capacities of from 1 to 700 gpm, and discharge rates of 1000 psi (viscous liquids) and 500 psi (water). Folder includes dimensions, specifications, and principles of operation.

Bul SE-5 is available from Sier-Bath Gear & Pump Co., Inc., Dept. CP, 9252 Hudson Blvd., North Bergen, N. J. When inquiring specify CP 3838 on convenient Reader Service slip between pages 2 and 3.

Investigate health hazards in chromate industry

In recent years, suspicion has steadily increased of carcinogenic hazards in the chromate-producing industry. Although various theories have been advanced as to the causative agent believed to be responsible for bronchiogenic cancer in the industry, this agent has not been precisely identified. In the absence of a comprehensive clinical and environmental study, the Public Health Service was requested by the industry to undertake such an investigation. Results of this study are now available in the form of a 131-page booklet.

This report substantiates the existence of a cancer problem among chromate workers, helps to identify the causative agents, and presents methods of controlling the hazard. Paper bound copies of "Health of Workers in Chromate Producing Industry" FS 2.2:H34/10 may be obtained by remitting 50c direct to Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Some answers on humidity

Problems of humidity and dehumidification in industrial plants are discussed in 4-page bulletin. A few of the subjects covered are: 1) What is meant by the term "relative humidity"? 2) What troubles occur with too high a humidity? 3) Will dehumidification do the same job as full air conditioning? 4) When does the need for dehumidification arise? 5) Tables of recommended humidities in various industries; and 6) Machinery for dehumidification and equipment for measuring humidity.

Bul 374 is available from Abbeon Supply Co., Dept. CP, 179-15 Jamaica Ave., Jamaica 32, N. Y. When inquiring specify CP 3839 on handy form, pages 2 and 3.

Gone for good !



There's nothing quite as lost as profits that go up in smoke! We mean the profits from the valuable dust that's mixed with the smoke from many industrial stacks.

Alert Plant Engineers, seeking the most economical way to recover that dust, come to Buell.

Why? Because, for more than twenty years, Buell Engineers have specialized in this field. Their objective; better and more economical equipment. Their success; case histories that show the recovery of more than 40 tons of valuable dust *daily*.

To accomplish this, Buell Engineers analyze dust content in *advance*—can tell you the most economical way to reclaim its value.

Because of this sound approach, Buell serves dozens of America's Leading Corporations—some right in your own field. Why not send for some of the names?

Our informative brochure—The Collection and Recovery of Industrial Dusts—explains *all three* Buell systems of industrial dust recovery. For your copy, write Dept. 11-I, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

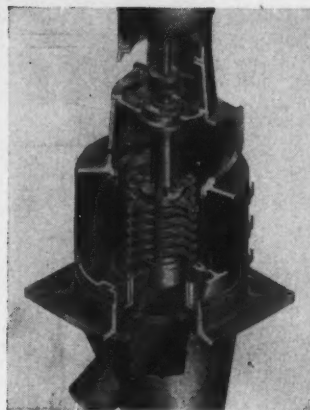
buell®



20 Years of Engineered Efficiency in
DUST RECOVERY SYSTEMS

When inquiring check CP 3840 on handy form, pgs. 2-3

CASE HISTORY SERIES



DISSOLVING VISCOSE

The Model RD-18-D Rietz Dissintegrator with 50 HP at 3600 RPM handles 50 to 75 gpm of viscose. Greatly improves dissolving operations in production of viscose rayon and cellophane. Investigate Rietz efficiency in similar services where the unit's unique high speed mixing action can be used in combining liquids, or liquids with solids.

Write for free technical literature covering the above installation.



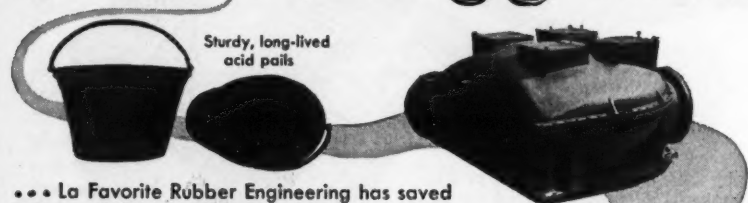
Equipment for the food and chemical process industries

Rietz

MANUFACTURING CO.
Santa Rosa, California

When inquiring check CP 3841 on handy form, pgs. 2-3

For More Than 50 Years...

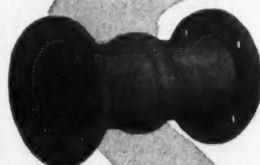


Sturdy, long-lived acid pails

... La Favorite Rubber Engineering has saved industry Millions of Dollars by inhibiting corrosion of process equipment through rubber lining and/or covering of pipe, tanks and hundreds of variations in process equipment.

The La Favorite method, developed over the years, has consistently proved its merit as a primary source of corrosion protection. Inspection of equipment in use for many years after lining and/or covering has disclosed that the La Favorite method of application and compounding of the rubber stock have always been equal to the life of the rubber.

This large sea-going condenser was completely lined, including baffle and covers.



One of several all-rubber expansion joints for the power plant of a public utility.

For details on lining or covering of processing lines and equipment, send blue prints for estimate of cost, or write for bulletins on your type of equipment.

LA FAVORITE RUBBER MFG. CO.

267 Wagaraw Road

Hawthorne, N. J.

RUBBER LININGS

RUBBER COVERING

RUBBER ENGINEERING

When inquiring check CP 3842 on handy form, pgs. 2-3

NEW LITERATURE

Discusses industrial waste control

One-page file sheet briefly discusses a control unit which regulates flow of industrial waste into sewers or sewage process systems. Controller, working in conjunction with a settling and a storage tank, is automatic. It does not easily clog and is said to be adaptable for corrosive wastes.

Units are also used for filter effluent control in filter plants, for regulating flow of wash water to filters, and for regulating influent to basins or mixing chambers.

File 600.21 is issued by Builders-Providence, Inc., Dept. CP, 345 Harris Ave., Providence 1, R. I. When inquiring specify CP 3843 on handy form, pages 2 and 3.

Report deals with ethylene oxide

Information on ethylene oxide and ethylene glycol as manufactured by the Shell Development Co. process is contained in informative report. Organized in two sections, report deals with manufacturing and marketing facts and statistics about ethylene oxide and ethylene glycol in first section. Second section presents information on the particular process and includes simplified flow diagram, process description, costs and utilities summary.

Report is issued by The Lummus Co., Dept. CP, 385 Madison Ave., New York 17, N. Y. When inquiring specify CP 3844 on handy form, pages 2 and 3.

Spectrophotometer helps solve toxicity problem

Confronted with the questionable problem of a pesticide's effect on orchard workers, scientists recently made an "on-the-spot" study of the contaminating effects of parathion on orchard air. Using a quartz spectrophotometer and a special all-glass sampling apparatus, researchers examined samples of air over a period of time and disproved the theory that toxic vapors are given off by the in-

LEAKPROOF CHECK VALVES

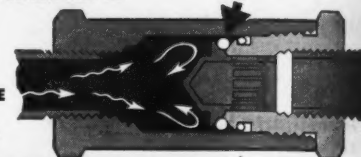
At Last!

THE "CIRCLE-SEAL" PRINCIPLE

utilizing a resilient "O" ring floating between conical seats enables us to provide "dead-tight" sealing—plus the assurance of unprecedented, maintenance-free service life and precision performance never before offered.

CIRCLE SEAL precision check valves

- VACUUM BREAKERS
- SENSITIVE LOW PRESSURE VENT OR RELIEF VALVES



JAMES-DOND-CLARK

2181 E. Foothill Blvd. • Pasadena 8, Calif.

Engineering data sent free of charge on request.

When inquiring check CP 3845 on handy form, pgs. 2-3

SPRACO NOZZLES

Write for NOZZLE CATALOG to
SPRAY ENGINEERING CO.
125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 3846 on handy form, pgs. 2-3

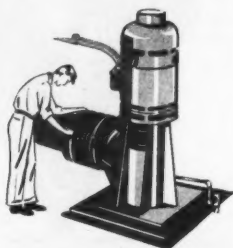
CHEMICAL PROCESSING

When TEFLON* Meets "FOLDED-and-FORMED" HEATING ELEMENTS

one result is the manufacture of gaskets and packings that are unaffected by caustics, solvents, acids, chemicals or other liquids. If the packings or gaskets you are using were made from or impregnated with Teflon (*DuPont Company Trademark), chances are this new plastic was processed in equipment heated with "Folded-and-Formed" Elements . . . unequalled for efficiency, economy, adaptability . . . in Standard or Custom-built Racks grouped to provide any required K. W. What is YOUR heating problem?



Meet us at the
Chemical Show
BOOTH 803



TRENT INC
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA 27 PA

When inquiring check CP 3847 on handy form, pgs. 2-3

Aurora Vertical Sump Pumps are "TOPS"

HEAVY DUTY
and LIGHT DUTY

ALSO NON-CLOG
SIZES UP TO 8"

PUMPS
"by
Aurora"

For all sump drainage; liquids handling in industry; transfer of chemical and hot liquids; handling viscous or high temperature liquids; boiler blow-off; heating returns etc.; also for handling screened and un-screened sewage and industrial waste.

Write for
BULLETIN 104
(Heavy Duty & Non Clog)
BULLETIN 103
(Light Duty)

Write TODAY
for
CONDENSED
CATALOG "M"

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA
PUMP COMPANY
SUBSIDIARY OF THE NEW YORK AIR BRAKE COMPANY
62 LOUCKS STREET, AURORA, ILLINOIS

When inquiring check CP 3848 on handy form, pgs. 2-3

NEW LITERATURE

secticide after spraying operations are completed.

Powered by a motor-generator unit and shaded by a large beach umbrella, the spectrophotometer ran continuously for 8-hr daily intervals over two separate 3-month periods. Portability and accuracy of unit facilitated these field tests.

Data File BB 10-11, a summary account of the parathion study, is issued by Beckman Instruments, Inc., Dept. CP, South Pasadena 1, Calif. When inquiring specify CP 3849 on handy form, pages 2 and 3.

Humorous animal photos for safety programs

Like the Pete Smith Specialty productions of movie fame, 32-page booklet presents a humorous collection of animal photos with suitable "safety" captions. Actors in these photos are chimpanzees, polar bears, dogs, cats, pandas, chicks, and hippopotamuses. "Safety Zoo" is available in quantity price lots varying from 20c (member price) each for lots of 1 to 9 booklets, to 7c each for lots of 20,000 or more from National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 3850 on pages 2 and 3.

Gives informative data on polyester resins

Accurate descriptions of all polyester resins currently being produced in commercial quantities by manufacturer and additional information on compounding, reinforcing materials, mold release agents and fabrication of reinforced plastics are contained in 18-page bulletin. Each subject is dealt with in a separate section of booklet and descriptive material is supplemented with numerous charts and appropriate photos.

Bul J-697C is issued by Bakelite Co., Div. of Union Carbide and Carbon Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y. When inquiring specify CP 3851 on handy form, pages 2 and 3.

"fire danger avoided with Quikupl"

says
GLENN LOOMIS
CHIEF ENGINEER
Durez Plastics & Chemicals, Inc.
North Tonawanda, New York

"**S**HUT down is costly . . . while providing the tight leak-proof seal required without the necessity of taking a chance on fire."

If you haven't already investigated this patented, service-proven stainless steel fitting which lets you assemble and disassemble with the turn of an Allen wrench, fill out the coupon below and we'll rush your free copy of our detailed technical manual Q100.

Since neither welding, threading nor flaring are required . . . and since installation is a matter of seconds per fitting . . . Quikupl saved us time, labor and dollars

BULLETIN Q100

Get the full story of this amazing stainless steel fitting which permits quick assembly and disassembly of stainless pipes or tubing without threading, flaring or welding.
Write for Bulletin Q100 today.

THE
COOPER ALLOY
FOUNDRY CO. • HILLSIDE, NEW JERSEY

NAME _____
POSITION _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____

When inquiring check CP 3852 on handy form, pgs. 2-3

**WANT FAST
CONTROLLED
UNIFORM DRYING?**

**CROSS-FLOW CIRCULATION
DOES IT in
GEHRICH OVENS**

The oven shown is electrically heated, with complete control of high speed air recirculation, ventilation, temperature and operating safety. It dries, evaporates or cures 22-24" x 46" trays of process materials.

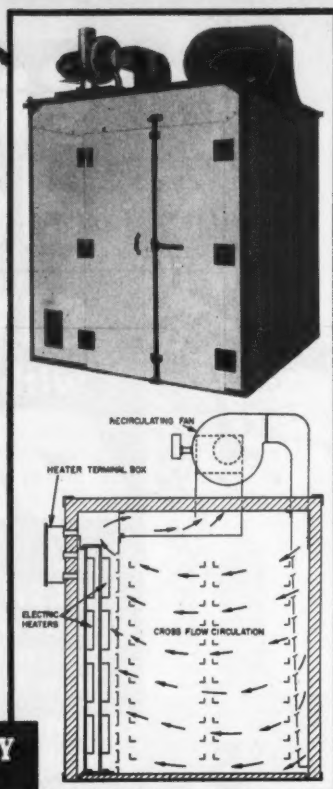
Gehrich electric, gas or steam ovens in bench, cabinet or truck types, are made in many standard sizes; special batch or conveyor types are built to your requirements.

Write for Catalogs.

W. S. ROCKWELL COMPANY

2203 Eliot Street • Fairfield, Conn.

When inquiring check CP 3853 on handy form, pgs. 2-3



NEW LITERATURE

**Testing Instruments
listed in catalog**

Numerous types of testing instruments for the paint and other industries are included in comprehensive, illustrated catalog. Units discussed in 48-page booklet range from various types of viscometers to instruments for measuring gloss and haze of numerous types of materials.

Section devoted to apparatus for determining viscosity describes and pictures instruments of the following types: bubble, Zahn, can, vertical, inclined-tube, Ford Cup and Stormer. Specifications for each type are also included in the catalog.

Following a section devoted to discussion of various constant temperature baths, booklet details pertinent information on several units for determining thickness of wet and dry films. In connection with this equipment, units are pictured for the application of these films.

Instruments for determination of drying time of various films — including the Sward Hardness Rocker and various recorders — are illustrated in subsequent discussion. Related equipment for measuring abrasion, adhesion, hardness and washability is included in another section.

Two detailed discussions outline specifications and give information on precision instruments for determining gloss and equipment for the measurement of reflectance, color, gloss and haze.

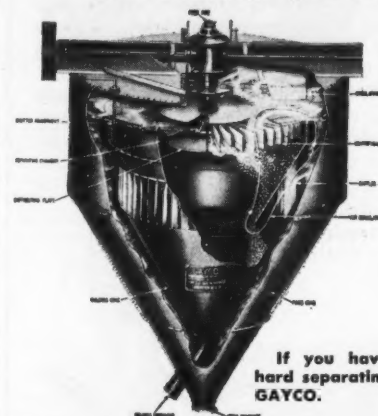
Flash point testers — both open and closed cup styles, penetrometers, grease workers and softening point testers for use with bituminous materials are described and pictured in section devoted to testing equipment for petroleum products.

1953 catalog of testing instruments is issued by Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. When inquiring specify CP 3855 on handy form, pages 2 and 3.

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undesirable oversize.

**"TIMKEN BEARING EQUIPPED"
GAYCO brings you all these:**



- Range 60 to 400 mesh
- greater capacity
- 25 to 30% greater production
- Cleaner Tailings
- Uniform Products
- Slow speed for slow wear
- Quick and easy adjustments

If you have an exceptionally hard separating problem, TRY THE GAYCO.

Universal Road Machinery Co.

Robert M. Gay-Division

Factory and Laboratory, Kingston, N. Y.

117 LIBERTY STREET NEW YORK 6, N. Y.

Canadian Representative: F. H. Hopkins & Co., Ltd.,

8500 Decarie Blvd., Montreal, Que.

When inquiring check CP 3856 on handy form, pgs. 2-3



**A Book You Should Have
on Mechanical Sealing...**

A complete reference catalog on Dura Seal—the engineered mechanical seal that rotates with the shaft. Ample illustrated . . . specific applications . . . installation data. A fact book of real value to designers, operators and maintenance departments.

WRITE FOR DURA SEAL CATALOG NO. 455 CP

DURAMETALLIC CORPORATION

KALAMAZOO, MICHIGAN

When inquiring check CP 3854 on handy form, pgs. 2-3



The Johnson Joint has solved many design and production problems as nothing else can. And the Type L, shown above, is helping to fit it into more applications all the time. It has lugs cast on body to permit simple rod support, an arrangement that both simplifies installation and assures proper alignment. Completely packless, self-lubricating and self-adjusting, the Type L Johnson Joint is used on calendars, dryers, mills, etc. — wherever steam or liquids must be admitted to rotating machine parts.

Write for new catalog

The Johnson Corporation
276 Wood St., Three Rivers, Mich.

When inquiring check CP 3857 on handy form, pgs. 2-3

**Heating, cooling of plastics
calenders detailed**

This 8-page leaflet is a reprint of an address made at the 1953 Technical Conference of the Society of Plastics Engineers. It discusses the latest developments in the heating and cooling of plastics calenders and presses by means of high temperature water. An indirect method of controlling roll surface temperature is also described in the address.

"Tomorrow's Roll Surface Temperature Control and New Press Heating Systems" is available from American Hydrotherm Corp., Dept. CP, 33-70 12th St., Long Island City 6, N. Y. When inquiring specify CP 3858 on handy form, pages 2 and 3.

**Price list for fine chemicals
has 35 reductions**

Folder measuring $3\frac{1}{2} \times 8\frac{1}{2}$ " contains the latest price list for manufacturer's line of fine chemicals. Three new products are listed: S-acetyl glutathione; 2,2'-dihydroxy-6,6'-dinaphthyl disulfide; and thymidine. Production economies by manufacturer make possible his reducing price on 35 of the products in the list. A feature of the amino acids price list is a table which gives the specifications for the optically standardized grade of the L- and D-isomers. "1953 Fine Chemical Price List" is issued by Schwarz Laboratories, Inc., Dept. CP, inquiring specify CP 3859 on handy form, pages 230 Washington St., Mount Vernon, N. Y. When inquiring specify CP 3859 on handy form, pages 2 and 3.

Low hydrogen electrode facts

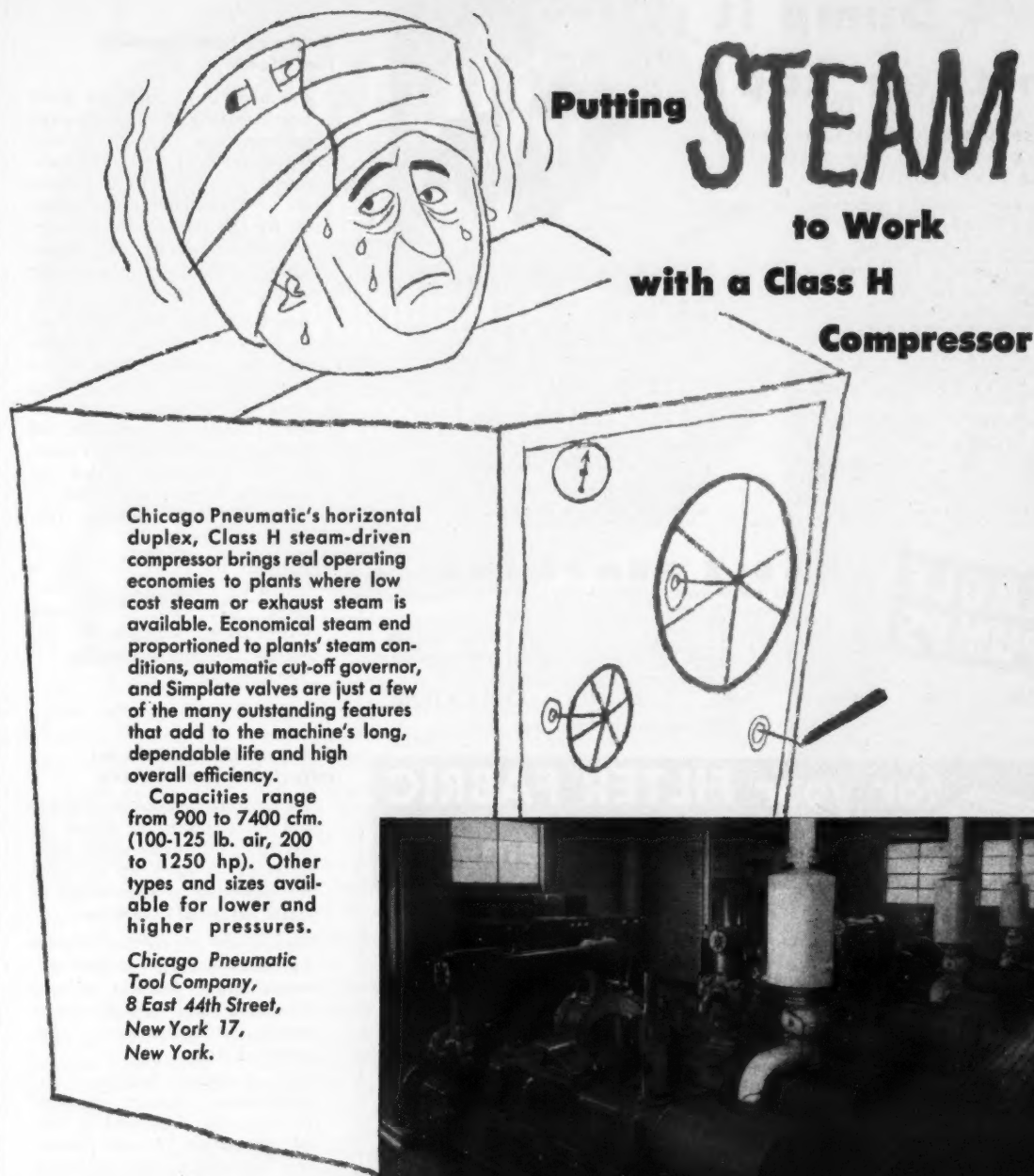
This 8-page technical bulletin deals with recent developments in the low hydrogen electrode field, with chapters devoted to the history of this type electrode, effects of hydrogen, effects of the basic slag, control of hydrogen, welding procedures, and applications.

Bul AR53-18 is available from Alloy Rods Co., Dept. CP, 3100 W. Market St., York, Pa. When inquiring specify CP 3860 on handy form, pages 2 and 3.

**Summarizes useful info
on furfuryl alcohol**

Illustrated, 28-page booklet contains information on commercial handling, physical data, chemical reactions and established uses of furfuryl alcohol. Divided into 5 main sections, bulletin contains over 10 pages of easy-to-read charts and tables.

Bul 205 is issued by Chemicals Dept. The Quaker Oats Co., Dept. CP, Merchandise Mart, Chicago 54, Ill. When inquiring specify 3861 on handy form, pages 2 and 3.

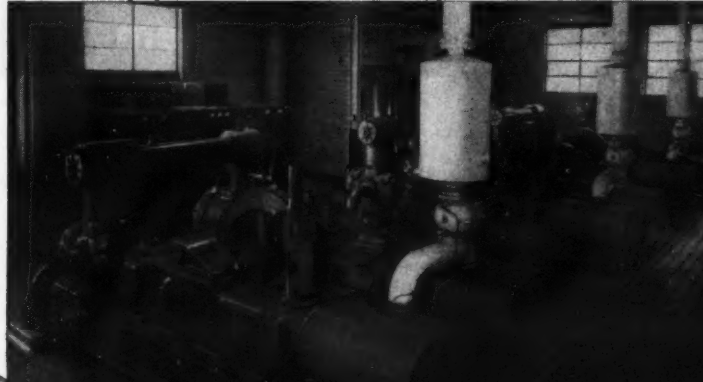


Putting STEAM to Work with a Class H Compressor

Chicago Pneumatic's horizontal duplex, Class H steam-driven compressor brings real operating economies to plants where low cost steam or exhaust steam is available. Economical steam end proportioned to plants' steam conditions, automatic cut-off governor, and Simplate valves are just a few of the many outstanding features that add to the machine's long, dependable life and high overall efficiency.

Capacities range from 900 to 7400 cfm. (100-125 lb. air, 200 to 1250 hp). Other types and sizes available for lower and higher pressures.

Chicago Pneumatic Tool Company,
8 East 44th Street,
New York 17,
New York.




Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

When inquiring check CP 3862 on handy form, pgs. 2-3

Dump it in their Lap!

THESE NAGLE PUMP SALES ENGINEERS
ARE QUALIFIED TO HELP SOLVE
YOUR PUMP PROBLEMS!

FREDERICK PUMP & ENGINEERING CO.
5743 Duarte St., Los Angeles 58, Calif.
COOPER ENGINEERING CO.
1639 Nasa Bldg., San Francisco, Calif.

THE MINE & SMELTER SUPPLY CO.
1652-1656 Blake St., Denver 2, Colo.
W. D. TAULMAN & ASSOCIATES
452 Spring St., N.W. Atlanta, Ga.

THOMAS PUMP CO., INC.
37 West Van Buren St., Chicago 5, Ill.
ROUSSEL PUMP & ELECTRIC CO.
P. O. Box 5206, New Orleans, La.

HAYES PUMP & MACHINERY CO.
180 Vine Street, Somerville 43, Mass.
WM. A. DALEE, INC.
9190 Roselawn Ave., Detroit, Mich.

C. T. DeHAAS COMPANY
Kaufman Building, Marquette, Michigan
F. H. BATHKE
450 N. Snelling Ave., St. Paul 4, Minn.

ENGINEERING & EQUIPMENT CO.
406 Market St., St. Louis, Mo.
JOHN REINER & CO.
35-50 38th St., Long Island City, New York

AMERICAN BRAKE SHOE COMPANY
Expert Division, 230 Park Ave., New York 17, N. Y.
SIEWERT EQUIPMENT CO.
28 Eastland Ave., Rochester 18, New York

JORDAN ENGINEERING COMPANY
Roselawn Center Building, Cincinnati 37, Ohio



GEORGE P. SCHUMACKER CO.
1120 Chester Ave., Cleveland 14, Ohio
C. S. CARTER
920 World Bldg., Tulsa 3, Okla.

BYRON DUNKLEY
Commercial Trust Bldg., Philadelphia 2, Penna.
PITTSBURGH GAGE & SUPPLY CO.
P. O. Box 1168, Pittsburgh 30, Pa.

RAMSAY PUMP & SUPPLY COMPANY
1701 Keenan Building, Pittsburgh 22, Pa.
THE MINE & SMELTER SUPPLY CO.
410 San Francisco Ave., El Paso, Texas

MODERN ENGINEERING SALES
7401 Avenue N—Box 9234, Houston 11, Texas
THE MINE & SMELTER SUPPLY CO.
121 W. Second South St., Salt Lake City, Utah

FRANK HOWELL CO.
P. O. Box 36, Richmond 1, Va.
GENERAL MACHINERY COMPANY
P. O. Station B, Spokane, Washington

CROSS PUMP & EQUIPMENT COMPANY
Box 889, Charleston, West Virginia
MINERT PUMP & ENGINEERING CO.
4521 W. Center St., Milwaukee 10, Wis.

**NAGLE
PUMPS**

NAGLE PUMPS, INC.
1247 CENTER AVENUE, CHICAGO HEIGHTS, ILLINOIS



PUMPS FOR ABRASIVE AND CORROSIVE APPLICATIONS
When inquiring check CP 3863 on handy form, pgs. 2-3

for your FILTER FABRIC problem

**IMMEDIATE
DELIVERY
OF THE RIGHT
FILTER FABRIC
FOR YOUR
PARTICULAR
NEED**

A complete line of industry-
accepted filter fabrics in all
weaves, weights and widths.

**DYNEL
NYLON
ORLON
SARAN
GLASS
COTTON**

Available in yards or rolls, or
custom-fabricated

by **Flaherty**

Specialists in fabrics for industrial
filtration

It takes a specialist to prescribe the most effective,
least expensive filter medium for your specific re-
quirement. Whatever your fabric problems are in
filtration — wet, dry or dust-collection, consult a
Flaherty filtration engineer for the best answer and
immediate dependable service.

Cut filtering costs! Reduce "down-time" for changes!
Send for FREE information TODAY

FLAHERTY Filter Fabrics, Dept. CM7
1025 Clinton Ave., Irvington, N. J.
Phone: ESsex 2-8700

Name
Firm
Product Filtered
Address
City State

When inquiring check CP 3864 on handy form, pgs. 2-3

NEW LITERATURE

Guide to heat treating tool steels

Intended as a guide to good
heat treating practice, 4-page
bulletin first lists 5 factors
which are fundamental to making
a successful tool. These
are: 1) good design; 2) steel
of the proper grade; 3) cor-
rect heat treatment; 4) proper
grinding; and 5) proper use
of tool.

Assuming the correctness of
all but heat treatment, bulletin
goes on to give some terms
and definitions used in heat
treating. It then presents in
some detail, a discussion of
hardening, quenching, and draw-
ing or tempering. Also in-
cluded is a brief description of
company's heat treating fur-
naces and ovens.

Bulletin on Heat Treating is
issued by K. H. Huppert Co.,
Dept. CP, 6830-32 Cottage
Grove Ave., Chicago 37, Ill.
When inquiring specify CP
3865 on pages 2 and 3.

Data, utilization info on adjustable-speed drive

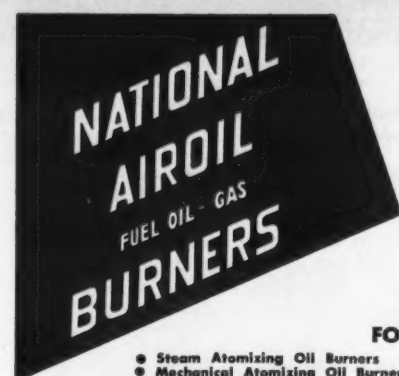
An informative booklet describes
and illustrates in 12 pages, an
electronic adjustable-speed drive
of from 3/4 to 3 hp designed for
powering a wide range of
small industrial equipment.

Attractively printed in 3 colors
and hole-punched for easy re-
ference filing, bulletin is well
illustrated and written in a
simple, straightforward, non-
technical style.

Ten operating functions and
performance features provided
by unit, and as applied to vari-
ous production jobs and process-
ing operations, are reviewed.
Highlighted pictorially are 11
typical applications.

In addition, booklet describes
components and optional acces-
sories of the unit, gives it phys-
ical dimensions, and the five hp
ratings in which it is available.
Charts cover hp and torque char-
acteristics.

Bul D-2102 is issued by Reliance
Electric & Engineering Co.,
Dept. CP, 1088 Ivanhoe Rd.,
Cleveland 10, Ohio. When in-
quiring specify CP 3866 on
handy form, pages 2 and 3.



SERVING
INDUSTRY
FOR 41 YEARS

- Steam Atomizing Oil Burners
- Mechanical Atomizing Oil Burners
- Low Air Pressure Oil Burners
- Rotary Oil Burners
- Industrial Gas Burners
- Combination Gas and Oil Burners
- Tandem Block Combustion Units
- Fuel Oil Pump Sets
- Refractory Burner and Muffle Blocks
- Valves, Strainers, Furnace Windows

Detailed information gladly sent you upon
request.

Automatic Oil Burners for Homes,
Churches, Apartment Houses, Factory
Buildings and Office Buildings.

Established
1912



Incorporated
1917

NATIONAL AIROIL BURNER CO., INC.

1300 EAST SEDGLEY AVE., PHILADELPHIA 34, PA.

Southwestern Division: 2512 SOUTH BOULEVARD, HOUSTON 6, TEXAS

When inquiring check CP 3867 on handy form, pgs. 2-3

Get Our NEW CATALOG just published

"Metalsmiths"
Stainless Steel
and Monel
Utensils



Gives latest prices,
sizes, descriptions on
all items shown here-
with, plus beakers,
stock pots, batch cans
and shovels. Order all
your needs direct,
with confidence. Over
30 years supplying
corrosion-resistant
equipment to process
industries.

Prompt Shipment
— Anywhere

WRITE FOR LATEST CATALOG — PRICE LIST



METALSMITHS

Division of Orange Roller Bearing Co., Inc.

556 White Street

Orange, N.J.

When inquiring check CP 3868 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Covers combustion gas turbine power plants

Combustion gas turbine power plants for mechanical drive applications are described in 24-page booklet. According to manufacturer, combustion gas turbines can mean savings in installation, operation, and maintenance costs for natural gas transmission, and in the chemical refinery, steel mill, and other process industries.

Booklet describes four types of power plants manufactured by company: 1800 hp, simple open-cycle; 5000 hp, compound open-cycle with regenerator; 5300 hp compound open-cycle; and 7000 hp simple open-cycle. Load diagrams, dimensioned outline drawings, performance curves, and colored cut-away drawings are presented for each type. Sample calculations show how to use curves to determine various engineering data.

Text also describes design and structural features, and includes detailed information on air compressor rotor and casing, gas turbine rotor and casing, combustion system, auxiliary assembly, control panel, and double helical gears. Twelve factors to be considered in selecting a combustion gas turbine power plant for mechanical drive service are listed.

Booklet B-5859 is available from Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 3869 on handy form, pages 2 and 3.

Precision colorimeter offers accuracy and versatility

Designed for use where the simplicity of a colorimeter is called for, this photoelectric colorimeter gives in addition the certainty and precision of optical measurements heretofore available only in spectrophotometers. The instrument accepts the same power supplies and wide range of cuvettes and embodies the same rugged construction as the manufacturer's Junior Spectrophotometer. Instead of using a monochromator and associated wavelength scale, the unit secures spectral isolation by filters.

Features, applications, principle of design, accessory equipment are described in four-page bulletin. Bul B-214 is issued by Coleman Instruments, Inc., Dept. CP, 318 Madison St., Maywood, Ill. When inquiring specify CP 3870 on handy form, pages 2 and 3.

Ease of assembly offered in belt conveyor units

Standard stock belt conveyor units for easy, complete assembly in various combinations to meet individual requirements are described in 4-page, illustrated bulletin No. ML-80-1 issued by Conveyor Specialty Co., Inc., Dept. CP, North Quincy 71, Mass. When inquiring specify CP 3871 on handy form, pages 2 and 3.

DICALITE

Research and Development Work has never stopped



Dicalite's "inquiring mind"—with laboratories for tools—searches constantly for new and better ways in which Dicalite can serve industry. Even during the recent period when diatomaceous materials were in critically short supply, Dicalite steadily continued the research which had already made many contributions to industrial processing.

Look at the brand-new product pictured here—developed by Owens-Corning Fiberglas Corporation. It is a battery separator, made of Fiberglas, in which Dicalite serves so well as the filler because of its unique physical characteristics. This new product promises longer life for car and industrial batteries, since it is completely insoluble in battery acids. Dicalite engineers worked with the technical staff of the manufacturer, who is now using a specially selected Dicalite material which is a vital part of the separator composition.

The problem may just as well have concerned filtration, insulation, or any other Dicalite application. Constant research and development work is one strong reason why Dicalite can serve you better, not only in variety and quality of products but in dependability as well. Perhaps you have a problem or project where this service may be helpful. A Dicalite engineer will gladly call at your request.



By the way, have you seen the feature article, "Diatomaceous Earth," on Dicalite operations and applications in the February issue of Industrial and Engineering Chemistry? Write today for your copy of our free reprint to Dept. C-79, Dicalite Division.

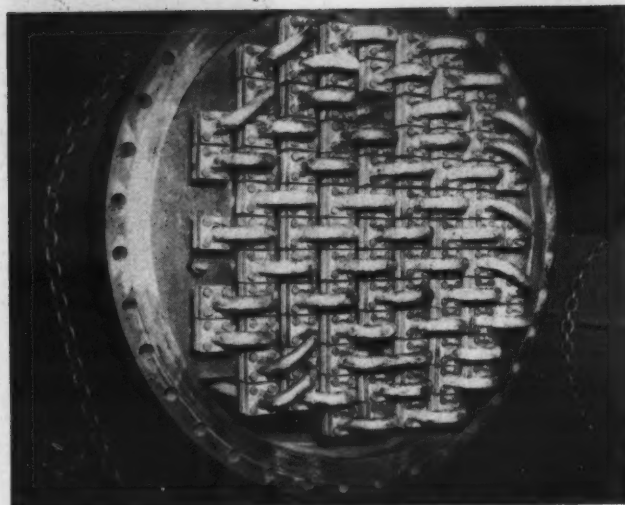
Dependable **Dicalite**[®]
GREAT LAKES
DIATOMACEOUS MATERIALS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION • NEW YORK 17 • CHICAGO 1 • LOS ANGELES 17

When inquiring check CP 3872 on handy form, pgs. 2-3

ABOVE—This enlarged photo is a view looking at the edge of the new Fiberglas battery separator. On the right is the main portion made of a composition containing Dicalite, which affords two important advantages: extreme resistance to the acid, and high porosity. The special structure including the layers of glass fibers on each side, affords good strength and allows much more free circulation of the battery acid.

THE UNUSUAL IS USUAL WITH US



One of four 42" x 20' Heat Exchangers with special design Return Bend Flanges . . . produced by DOWNINGTOWN'S Heat Transfer Division. Useful literature gladly sent upon request. Remember: "your needs are our specialty!"



DOWNINGTOWN IRON WORKS, INC.
DOWNINGTOWN-PENNA.

New York Office: 30 Church St.

DIVISION OF
PRESSED STEEL
TANK COMPANY



STEEL AND ALLOY PLATE FABRICATION AND HEAT EXCHANGERS

When inquiring check CP 3873 on handy form, pgs. 2-3

for Those "Tough-to-Handle" Fluids



- ✓ NO PACKINGS • NO LEAKAGE
- ✓ NO CONTACT BETWEEN FLUID HANDLED AND WORKING PARTS
- ✓ EASY TO CLEAN
- ✓ LOW COST MAINTENANCE
- ✓ MADE OF ANY MATERIAL
- ✓ AMPLE PRESSURE

Are your process fluids corrosive, abrasive, thick, heavy, viscous or otherwise difficult to handle? Do they clog, build up on or quickly destroy the pump's working parts and increase operating costs?

If so—then let the Shriver Diaphragm Pump prove how it can really "take it"—no matter how difficult the material—save in over-all maintenance cost and in prolonged pump service life. Write for Bulletin 137.

T. SHRIVER & CO., Inc. 846 Hamilton St. • Harrison, N. J.
Filler Presses • Filler Media • Diaphragm Pumps

When inquiring check CP 3874 on handy form, pgs. 2-3

NEW LITERATURE

Specs, features of lift truck given in six pages

Specifications, design and construction features of manufacturer's 4000-lb capacity sit-down lift truck are described in 6-page, 2-color bulletin now available.

Detailed description is given on: 1) higher fork elevation, 2) increased travel and hoist speeds, shorter turning radius, lighter weight and convenience of controls.

Design features, including drive assembly, caster type steering axle, frame, controls, hydraulic hoist and tilt system are also explained. Photographs accompany write ups of these major assemblies. Other photo captions describe customer uses of the Yak and list advantages.

Detailed specifications on performance, speed, weight, electrical, mechanical, tilt, lubrications, safety devices and general facts are listed. Line drawings give overall dimensions of truck and describe maneuverability of the chassis.

Bul 430 is issued by the Mercury Mfg. Co., Dept. CP, 4044 S. Halsted St., Chicago 9, Ill. When inquiring specify CP 3875 on handy form, pages 2 and 3.

Cost-saving applications of steel strapping & stitching

Current issue of company's 12-page quarterly publication is devoted to cost-saving applications of steel strapping and wire stitching. Six feature articles and three short photo-caption stories serve to explain some of the savings which have been effected by various industries with use of these two products.

Confab, Vol. 4, No. 2, is available from Acme Steel Co., Dept. CP, 2814 Archer Ave., Chicago 8, Ill. When inquiring specify CP 3876 on handy form, pages 2 and 3.

Describes laboratory equipment from balances to ovens

Sixteen-page catalog of apparatus and equipment features complete line of heat treating equipment and dehumidification units. Separate section gives detailed descriptions of industrial-type batch ovens, combination temperature and humidity cabinets, muffle furnaces, mechanical convection ovens, high temperature ovens, and forced draft units.

Also included in informative booklet are descriptions of integral motor pumps, heaters, micro proportioning liquid dispensers, particle apparatus, analytical balances, electronic relays, and a utility water bath.

"Lab Oratory," May, 1953 is issued by Schaar and Co., Dept. CP, 754 W. Lexington St., Chicago 7, Ill. When inquiring specify CP 3877 on convenient Reader Service slip between pages two and three.

What's

"A

New

Solution"?

It's an article in **CHEMICAL PROCESSING** describing a new way of solving a tough plant operating problem.

In each issue you will find specific "case histories" showing how these processing problems were solved.

Each article
... states the operating problem
... explains the process used
... gives details of how problem was solved
... shows results secured.

Take a look at "New Solutions" articles beginning on page 8 in this issue—they might suggest a "solution" for some of your tough processing problems.



Convention & Exhibit

Schedule

1953

- Sept. 6-11. American Chemical Society, 124th National Meeting, Chicago, Ill.
- Sept. 9-11. National Agricultural Chemicals Association, 20th anniversary meeting, Spring Lake, New Jersey.
- Sept. 13-16. Electrochemical Society-104th meeting, Wrightsville Beach, North Carolina.
- Sept. 13-16. American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, California.
- Sept. 16. Society of Plastics Industry, Midwestern Plastics Conference, Drake Hotel, Chicago, Ill.
- Sept. 17-19. American Association of Textile Chemists and colorists, annual convention, Conrad Hilton Hotel, Chicago, Ill.
- Sept. 21-25. Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.
- Oct. 6-8. Electric League of Western Pennsylvania, Fourth Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Pa.
- Oct. 8-9. Society of the Plastics Industry, New England section meeting, Equinox House, Manchester, Vermont.
- Oct. 12-16. National Association of Corrosion Engineers, short course on cathodic protection, University of Illinois, Urbana, Ill.
- Oct. 19-23. National Safety Council, 41st National Safety Congress and Exposition, Chicago, Ill.
- Oct. 20-22. Society of Industrial Packaging & Materials Handling Engineers, 8th annual exposition, Mechanics Building, Boston, Mass.
- Oct. 22. American Institute of Chemical Engineers, Hotel New Yorker, New York City, N. Y.
- Oct. 26-27. National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.
- Oct. 27. Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York, N. Y.
- Oct. 29-31. Federation of Paint & Varnish Production Clubs, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.
- Nov. 2-4. American Oil Chemists' Society, 27th Fall Meeting, Hotel Sherman, Chicago, Ill.
- Nov. 17-18. American Institute of Electrical Engineers, conference on recording & controlling instruments, Benjamin Franklin Hotel, Philadelphia, Pennsylvania.
- Nov. 30-Dec. 5. 24th Exposition of Chemical Industries, Commercial Museum & Convention Hall, Philadelphia, Pa.

Technical data on the revolutionary new

holo-flite*

(HOLLOW-FLIGHT)

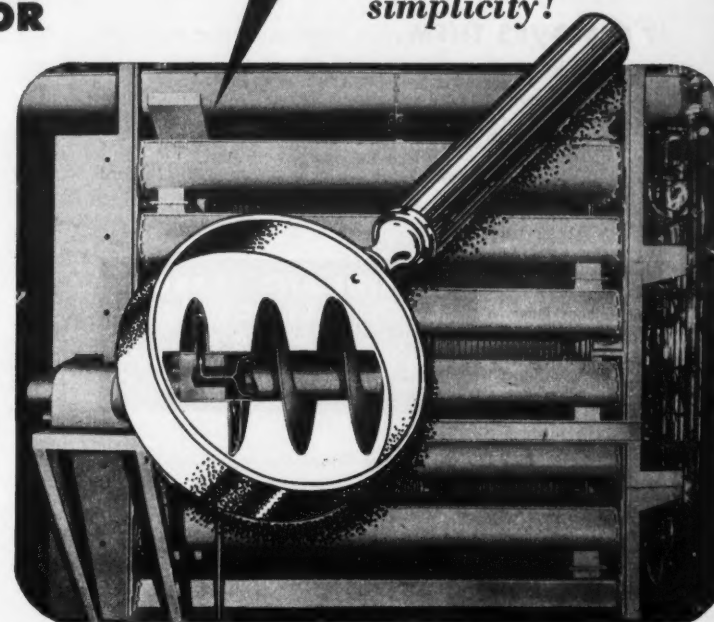
PROCESSOR

If you have processing operations where slurries, solids, pulps or pastes must be cooled or cooked, be sure to investigate the many unique advantages of the newly-developed HOLO-FLITE Processor before you install any heat-exchange equipment.

Here's the HOLO-FLITE principle...

Two or more screw conveyors rotate slowly in a trough. The blades and shaft of each flight of conveyors are hollow, with provision for circulating the heat-transfer agent through them. The product to be cooled or cooked is moved along the trough, being constantly rotated into, around, over and under the conveyor screws as it moves.

Thus, a continuous thermal transfer takes place between the product and the heat-transfer fluid circulating in the blades. The product is cooled or cooked in *continuous-flow* without the "stop-and-go" losses of batching operations... and cooled products can be packaged directly from the HOLO-FLITE discharge—saving space, time and additional handling.



THIS 6-TIER HOLO-FLITE cools 7 tons of cottonseed press cake per hour from 285° to 89°F. in a total floor space of only 28 sq. ft.
(Inset) Enlarged cutaway view of HOLO-FLITE screw showing heat-transfer principle.

Here are typical HOLO-FLITE advantages

The HOLO-FLITE principle is so unique it is setting completely new standards of performance in many ways. For example...

*Reg. T.M.

The HOLO-FLITE Saves Space

—It requires as little as 1/5th the space of other units of comparable capacity because (1) it has far greater heat-transfer area per cubic foot of space... and (2) the flights can be "tiered" as high as desired to give maximum capacity in very small floor areas.

The HOLO-FLITE is Versatile—

Processed product can be fluid, pulp or paste—granular, crys-

talline or powdered solid. Heat-transfer fluid can be refrigerant, cooled or ambient water, steam, oil or any other desired fluid, at any normal temperature range.

The HOLO-FLITE is Dust-Free

—Its gentle action provides large heat-transfer action without dust and with negligible particle abrasion. Simplifies installations, assures higher quality product.

The HOLO-FLITE is Adaptable

—It can easily be designed to handle virtually any capacity by (a) varying the diameter of the screws (7" to 16")... (b) varying the length of the screws (8 ft. to 20 ft.)... (c) varying the number of intermeshing screws per trough (2, 4, or 6)... and (d) varying the number of tiers stacked on top of one another (1 to 10, or more).

The HOLO-FLITE is in daily operation on such typical products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods and many other equally-varied products.

What is your problem? Our engineers will be glad to assist you in making the most of HOLO-FLITE advantages. Write wire, or phone the office nearest you!

Want More Facts? This 8 page booklet describing the HOLO-FLITE in greater detail will gladly be sent on request. No obligation, of course.



WESTERN

Precipitation

CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. LaSALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 3878 on handy form, pgs. 2-3

Tubular	52
Vibrating	53
Coolers, Cascade	84
Continuous	167
Rotary Air	248
Rotary Water Tube	248
Cooling Towers	138
Correspondence Courses	73
Corrosion Measurement	77
Corrosion Tour	149
Cosmetics, Formulation of	41
Counters, Coated Tablet	116
Couplings, Flexible	117, 164
Cranes, Overhead	63
Crystal Dewatering	16
Cyclohexanol	24
Cylinders, Air	6
Gas	112

D

Defoamers	36
Dehumidification	237
Dehydrating Equipment	192, 248
Desiccants	204
Detectors, Carbon Monoxide	164
Leak	97
Static Electricity	168
Detergents	38
Dewatering of Crystals	16
Dewatering Presses	248
Dewatering Screens	248
Diatomaceous Silica	232
Dicalcium Phosphate	30, 31
Dichlorisopropyl Ether	246
Diethanolamine	41
Diethyl Ethoxymethylene Malo- nate	38
Diketone Acetone	36
Dimethyl Sulfates	33
Dimethylformamide	29
Disintegrators	238
Dispersants	36, 74
Distillation Columns	145
Distillation Trays	142
Dockboards	55
Dog Legs, Teflon	10
Dollies	60
Dosimeters, Pocket-size	172
Drills, Rotary	204
Drives, Adjustable-speed	242
Friction	235
Hydraulic	235
Sheave	114
Variable Speed	19, 180
Drum Handling Equipment	66
Drum Upending Bars	114
Drums, Stainless	115
Dryers	15, 74
Batch	167
Rotary	120
Rotary Direct Fire	248
Rotary Hot Air	248
Rotary Steam Tube	248
Drying Equipment	147
Ducts, Plastic Tank	128
Dust Collection Systems	237
Dust Collectors	7, 20, 110, 133, 213, 223
Dust Control Equipment	246
Dyeing, Dye	78

E

Ejectors, Steam Jet	191
Electric Motors, Noise Reduc- tion in	76
Electrical Equipment	80, 81
Electronic Equipment	126
Electrophoresis-diffusion Appa- ratus	119
Elevators, Bucket	61, 183
Enamels, Alkyd	38, 39
Corrosion-resistant	196
Instant Drying	196
Engineering, Plant	204
Engineering Consultants	21
Engineering Research Projects	235
Engines, Lightweight Diesel	177
V-type	233
Envelopes, Teflon	10
Etching Chemicals	34
Ethyl Acetate, Safety Data on	167
Ethylene Diamine Tetraacetic Acids	42
Ethylene Diamine Tetraacetic Salts	42
Ethylene Oxide	238
Evaporators	188
Evaporation Data	224
Exhausters	87
Sanitary	148
Exhausters	197
Power-roof	214
Expanders, Tube	214
Extinguishers, Carbon Dioxide	165

F

Fabrication, Plastic	150
Fabrics, Industrial	116
Fan Grills, Plastic	212
Fasteners, Stainless	131, 212
Fasteners, Corrosion-resistant	229
Fatty Acids	38, 39, 41

Coconut Oil	44
Fatty Alcohols	48
Feeders	140
Gravimetric	93, 98
Liquid	105
Volumetric	96
Fertilizer Plants	143
Fertilizers, Water-Soluble	220
Fiber Stabilizing Process	70
Fibers, Text on	136
Fillers, Mineral	232
Filling Machines, Powder	110
Tube	114
Filter Aids	232
Filter Cloths, Woven Glass	132
Filter Fabrics	185, 242
Filter Papers	123
Filter Plates	227
Filter Presses	78, 140
Filter-regulator-lubricator	162
Units	216
Filters	79, 208, 221, 250
Centrifugal	9
Laboratory	127
Molten Phosphorus	130
Pneumatic	207
Pressure-leaf	13
Sanitary	227
Vacuum	125
Filtration Systems	159
Fine Chemicals	241
Fire Extinguishers	163
Fire Extinguishing Systems	173
Foam	162
Fire Protection	162, 71
Fires, Crude Rubber	165
Fittings, Corrosion-resistant	254
Forged Steel	211
Industrial Tube	199
Manhole	145
Pyrex	84, 85
Stainless	131, 239
Tube	184
Welding	3, 82, 156
Flakers	116
Flame Cutting, "3-D"	178
Flocculating Agents	42
Floor Patch and Resurfacer	254
Floor Patching	202
Flooring, Metal	172
Formic Acid	45
Freon	188
Frit for Aluminum	36
Fuel Burning Systems, Pack- aged	182
Fumaric Acid	30, 31
Fume Collectors	230
Fume Disposal	141
Fume Washers	141
Furfuryl Alcohol	241

G

Gages, Ionization	214
Liquid Level	177, 251
Tank	102
Gaskets, Spiral-wound	195
Teflon	164, 234
Gases, Rare	250
Gears	196
Generators, Package Steam	189
Steam	85, 232
Glassware, Plant Equipment	84, 85
Gloves, Flame-resistant	164
Glycerine	35
Glycols, Polyethylene	35
Gold, Electroplated	36
Granulators	144
Gratings, Safety	170
Gravimetric Analysis	248
Grease Formulations	38, 39
Grease Manufacturing	8
Guns, Spray	210

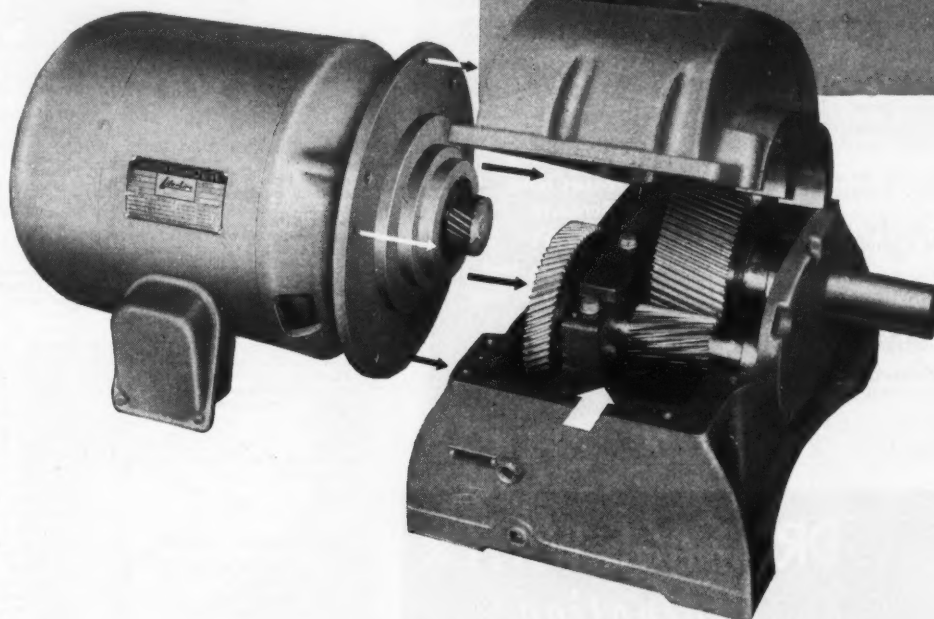
H

Hammers, Flux Scaling	210
Hangers, Pipe	185
Heat Exchangers	138, 142
161, 168, 176, 244, 245, 249, 254	
Heat Transfer Fluids	30, 31
Heat Treating of Tool Steels	242
Heaters, Radiant	144
Unit	186
Water	123
Heating Elements	239
Heating Systems, Hot Water	191
Herbicides	48
Hexachlorocyclopentadiene	28
Hoods, Protective	225
Hose, Flexible Metal	83, 193, 212
Rubber-covered	114
Humectants	73
Hydrometallurgical Use of Ion	47

I

Idlers, Belt Training Return ..	61
Roller Bearing	56
Immersion Grid Units	224
Indicators, Conductivity	102
Extension	132
Flow	94, 102, 230
Humidity	229
Temperature	106, 235, 235

Gearmotors are the most efficient means of speed reduction in the 1 to 75-hp range.



Here's why Life-Line GEARMOTORS stay on the job longer

LESS TIME OUT FOR SERVICING MOTOR

Removing the motor from a Life-Line gearmotor takes but a few minutes. Remove the motor mounting bolts and you are on your way—and, reassembly is just as simple and fast. Install the mounting bolts and the job's complete. No realigning of shafts—no coupling to adjust—no mounting feet to shim.

Should you be "on the spot" where down time is critical, this means that your spare motor can be quickly and easily installed. At the most, it is a simple assembly of the adapter bracket.

LESS TIME OUT FOR SERVICING GEARS

Here again, Life-Line's split case construction pays off. Simply by removing the top half of the gear

case, the gears can be inspected or removed without touching the mounting bolts—without draining the oil—without disturbing the connected load.

Ask your Westinghouse representative for the details on how Life-Line gearmotors pay for themselves in production time saved. For descriptive literature, write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-07313-A

YOU CAN BE SURE...IF IT'S
Westinghouse



When inquiring check CP 3882 on handy form, pgs. 2-3

Radioactive Sample Shields	122
Radioactivity Analysis	46
Ramps, Adjustable	55
Range Chemicals	opp.
Recorders, Flow	97
Indicating	99
Temperature	235
Rectifiers, Ignitron	187
Mechanical	20, 21
Refinery Reactors, Isotope	86
Inspection of	157
Refractories	70, 137
Refractory Concrete	235
Refrigeration Equipment	129
Regulators, Pressure	106
Temperature	94, 127
Voltage	130
Relays, Alarm	102
Resins, Foaming	68
Paint	28
Polyester	239
Resistance Boxes, Decade	134
Resistors, Temperature	106
Respirators	166, 189
Ribbons, Sealing	200
Rolling Machines	200
Rolls, Plastic	78
Roof Maintenance Systems	194
Rotators, Portable	64
Rubber Chemicals	30
Rubber Coverings	238
Rubber-protected Products	151

S

Safety, Economic Value of	163
Safety Equipment	166
Safety Equipment Station	171
Safety Films	230
Safety Photos of Animals	239
Safety Posters	220
Safety Record in Rayon Plant	173
Salt Dispensers, Plastic	166
Scales	66
Bagging	58
Conveyor	236
Corrosion-resistant	126
Filling	112
Sacking	62
Scratch Test Apparatus	130
Screen Guards	236
Screens, Folding	12
Liquid Vibrating	225
Round Rod	180
Seals, Mechanical	128, 240
Piston Ring	157
Separators	68
Battery	243
Centrifugal	240
Magnetic	236
Sheeting	187
Silicone Foaming Resins	68
Silos, Concrete	209
Skids, Barrel & Box	66
Sodium Epoxystearate	26
Sodium Formate	45
Softeners, Water	145
Soil Conditioners	190
Solvent Extraction Plants	80
Solvents, Self-emulsifying	194
Sorbitol	28
Spectacles, Split Joint	166
Spectrometers, Mass	101
Spectrophotometry	121
Spot Tests	248
Spray Booths	246
Sprinklers, Automatic	162, 171
Static Electricity Neutralizers	168
Steam Accumulators	189
Steam Traps	182, 228, 254
Stearic Acid, C-14	33
Stearic Acids	38, 39
Steel Plates, Size Selector for	190
Steel, Stainless	134
Stitchers, Wire	18
Storage Stands, Rotary	186
Strainers, Multiple-basket	16, 17
Strapping, Steel	244
Strapping Units	187
Strontium Titanate	46
Studs, Concrete Anchor	194
Substrations	80, 81, 187
Sulfates, Fatty Alcohol	48
Sulfur Dioxide	34
Sulfuric Acid Processes	10
Superphosphates, Triple	46
Surface Active Agents	41
Surfacting Compounds, Road	186
Surfactants	28, 233
Lignosulfonate	45
Switches, High-speed	101
Pressure	100
Switchgear Units	80, 81
Switchgears	178, 179

T

Tachometers	98
Tall Oil Products	43
Tanks, Corrosion-resistant	216
Plastic Dip	217
Stainless	123, 197
Storage & Mixing	250
Tantalum Strip	153
Tape, Plastic Label	112
Tar Bases	25
Tees, Plastic Reducer	158
Teflon	48

Temperature Regulators	127
Test Chambers	131
Test Kits, Portable	124
Testers, Tensile Strength	122
Testing Instruments	240
Tetrachloro Phthalic Anhydride	29
Tetrines	42
Textile Finishing Agents	24
Thermometer, Adjustable	197
All-metal	102
Dial	100, 106, 104
Mercury	104
Tin Content Indicators	128
Tractors	64
Tractor-shovels	51, 54
Trailers, In-plant	57
Transformers	214
Transmitters, Flow	90, 92
Pressure	103, 106, 234
Tricalcium Phosphate	46
Trichlorethylene	29
Trichlorethylene Processes	75
Trichlorobenzene	24
Triethanolamine	41
Truck Tractors, Trailer	65
Trucks, Electric	146
Fork	55, 59, 60
Hand	52
Lift	52, 56, 62, 63, 64, 117, 166, 244
Personnel Lift	194
Tube, Condenser	72
Corrosion-resistant	14
Tube, Duplex	149
Flexible	253
Instrument	217
Plastic	133
Seamless Flexible	86
Stainless	160, 188, 201
Tubing, Titanium	192
Values of	211
Turbines, Steam	69
Turpentine	37

U

Ultrasonic Equipment	121
Unions, Rotary	172
Utensils, Stainless	242

V

V-belts	18
Vacuum Cleaners, Portable	215
Vacuum Equipment	116
Vacuum Systems	77
Valves	78, 218, 3rd cover
Check	238
Control	207
Corrosion-resistant	206
Diaphragm	169
Drain	212
Gate	231
Lubricated Plug	100, 198, 215
Reducing	197
Rubber Pinch	137
Safety Relief	232
Steel	246
Tank	252
Toggle	204
Vaporizers	181
Varnishes, Heat-resistant	22
Vehicles, Paint	166
Ventilators	226
Roof	154
Vessels, Stainless	236
Vibrator Screens	55
Vibrators	162
Air	66
Pneumatic	27
Vinyl Acetate Copolymers	144
Vinyl Materials	36
N-Vinyl-2-pyrrolidone	95, 120
Vicometers	135
Viscosimeters, Saybolt	120
Viscosity Standards	202
Vises, Machinists'	202

W

Washers, Mechanical	246
Waste Control Systems	238
Water, Viscosity of	120
Water Conditioners	156
Water Conditioning	230
Water Conditioning Plants, Package	206
Water Softeners	145
Weighing Systems	89
Welding Electrodes	191, 199
Low Hydrogen	231
Wire, Insulated	132
Wire Rope	190
Wire Stitching	244
Wood Data	226

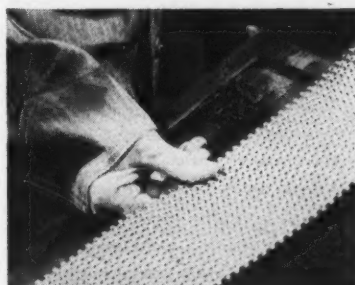
X

X-ray Equipment, Portable	184
---------------------------	-----

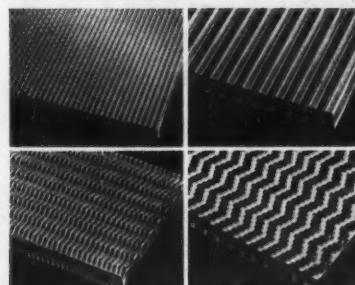
Z

Zinc Dust	opp. 27
Uses of	32

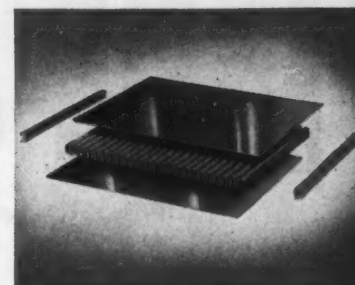
Here's how Trane brazes aluminum to solve tricky heat transfer problems...



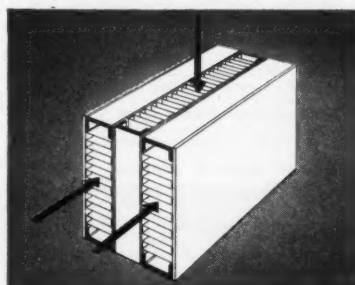
Corrugated fin surface for TRANE Brazed Aluminum Exchangers is formed in special presses from aluminum brazing sheet. Thickness can range from .005 to .032 inch; fin height to .50 inch; spacing 4 to 18 fins per inch.



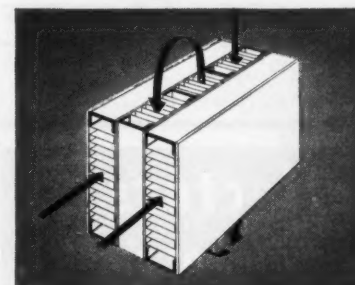
Many types of surface available. The brazed aluminum fins may be straight and continuous. Or they can be wavy, serrated or perforated to provide wide variety of heat transfer to pressure drop.



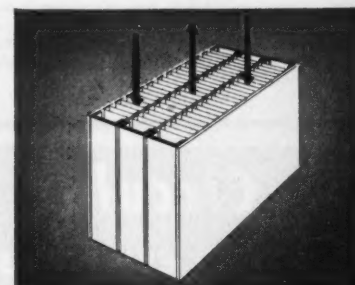
Exploded view shows component parts of a single passage. Fins, channels and parting sheets, all made from aluminum brazing sheet, become integrally bonded when assembled unit is submerged in a molten salt flux bath.



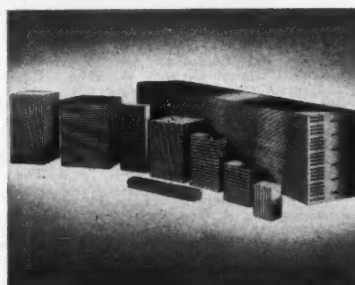
Cross-flow arrangement has fins in adjacent passages running crosswise to each other. TRANE Brazed Aluminum Surface can pack 450 square feet of heat transfer surface into one cubic foot of space.



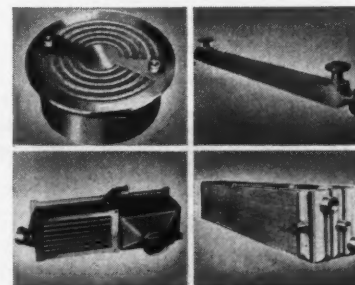
Multi-pass arrangement, like the cross-flow type, has fins in adjacent passages running crosswise to each other. With this arrangement, however, alternate passages are constructed to produce multiple passes.



Counter-flow arrangement has fins in adjacent passages running parallel to each other. A wide variety of different types of corrugated fin sheets can be used to handle different fluids in the same exchanger.



A wide range of core sizes is available up to 106 inches in length. Either bolt-on or integrally welded headers can be provided. Individual cores can be welded together to form larger multi-core units.



Design flexibility permits construction of units to handle practically any specification of heat transfer, pressure drop, volume, number and direction of passes. Some units handle as many as six different fluids simultaneously!

TRANE

*pioneers in
the science of
heat exchange*

If you have a tricky problem in heat transfer . . . TRANE Brazed Aluminum Exchangers may be the answer. Contact your TRANE Sales Office or write direct.

The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn. • Trane Co. of Canada, Ltd., Toronto, 80 U.S. and 14 Canadian Offices

When Your Process Demands FILTERING MIXING STORING



LOOK FOR THESE FEATURES

PROVED, LOW-COST OPERATION
EASY TO CLEAN
DEPENDABLE, TROUBLE-FREE
PERFORMANCE
ALL SIZES AND CAPACITIES
LOW UPKEEP

Regardless of the size or type of your installation, whatever your process may be, there's an Alsop Filter, Mixer and Storage and Mixing Tank to "fit your job", you can be sure of getting from Alsop the right unit properly applied — you can depend on Alsop proved performance features. Alsop Filters, Mixers and Tanks are available in a complete range of sizes and capacities and Alsop Equipment is custom fitted to your application by engineers who have thorough experience in Filtration and Agitation. Look for the proved features and the benefits that Alsop Filters, Mixers and Tanks can bring to your processing operations. Write for full information, recommendations and quotations.

ALSOP
ENGINEERING CORPORATION

809 Alsop Square, Milldale, Connecticut

When inquiring check CP 3886 on handy form, pgs. 2-3

Circular Collectors Types for every waste treatment problem



SUSPENDED COLLECTORS are used where a simple bridge can span the tank diameter. In this case, the complete motor and drive assembly, together with the drive tube and collector arms, are suspended from the bridge.

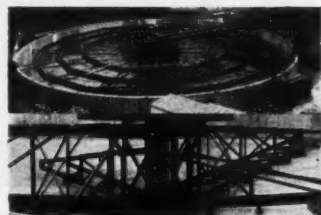
WRITE FOR BULLETIN 9W65
CLARIFLOW THICKENER

This unit utilizes the principles of fluid mechanics, so highly developed in Walker sedimentation units. It removes all settleable solids and remarkably clarifies the flow. All parts are sturdily built... designed for the "tough" jobs.

WRITE FOR BULLETIN 10169

PIER DRIVE COLLECTOR

The Pier Drive Collector is recommended where it is undesirable to operate a Tractor Drive... where the access bridge must be stationary, or the corners of square tanks must be scraped. Center drive mechanisms, ranging from 1/2 to 10 horsepower, are built for long life and heavy duty service. Worms are carburized and ground steel and precision meshed with hardened bronze worm wheels. The balls run in hardened, ground, renewable ball races.



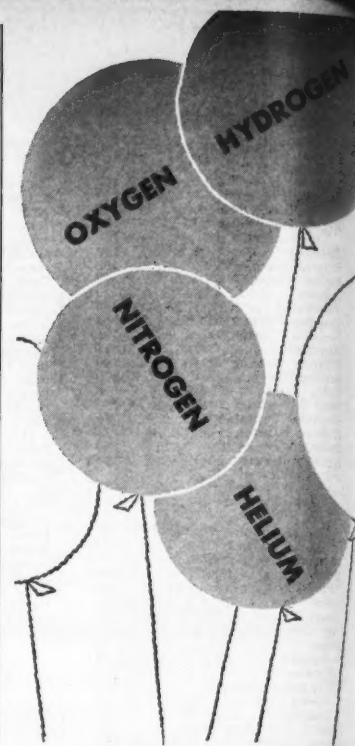
WALKER PROCESS

WALKER PROCESS EQUIPMENT INC.
FACTORY • ENGINEERING OFFICES • LABORATORIES
AURORA, ILLINOIS

When inquiring check CP 3887 on handy form, pgs. 2-3

Advertisers in this issue

A	
Abbe Engineering Co.	220
Agency-Spooner & Krieger	
Acme Industries, Inc.	129
Agency-Lbe Jaqua Company	
Adams Co., Inc., R. P.	130
Agency-Melvin F. Hall Advertising Agency	
Aerobin Corporation	168
Agency-Kitchards & Webb, Inc.	
Airetool Manufacturing Company	214
Agency-Harry M. Miller, Inc.	
Air Reduction Magnolia Co., A Division of Air Reduction Company, Incorporated	250
Agency-G. M. Basford Company	
Allied Radio Corp.	126
Agency-George Brodsky	
Allis-Chalmers Mfg. Co.	11, 153, 178, 179, 225
Agency-Compton Advertising Inc.	
Allis-Chalmers Tractor Division	
Agency-Bert S. Gittins Advertising	54
Allmetal Screw Products Company, Inc.	131
Agency-Fred Lange Associates, Inc.	
Alsop Engineering Corporation	250
Aluminum Company of America, Paint Service Bureau	40
Agency-Fuller & Smith & Ross Inc.	
Alvey Conveyor Mfg. Co.	62
Agency-Oakleigh K. French & Associates	
American Agile Corporation	150
Agency-Herb W. Buerger	
American Air Filter Company, Inc.	133
Agency-Doe-Anderson Advertising Agency	
American Chemical Paint Company	150
Agency-May Advertising Company	
American District Steam Company, Inc.	176
Agency-Warman, Robins & Gorham, Inc.	
American Hard Rubber Company	151
Agency-W. L. Towne Advertising	
American Tool & Machine Company	200
Agency-James Thomas Chisring Co.	
American Wheelabrator & Equipment Corp.	223
Agency-The Jaqua Company	
Ames Iron Works	232
Agency-Melvin F. Hall Advertising Agency	
Ampco Metal, Inc.	202, 203
Agency-Hoffman & York, Inc.	
Anderson Company, The V. D.	228
Agency-Will, Inc.	
Annin Company, The	207
Agency-The McCarty Company	
Ansil Chemical Company, Fire Equipment Division	163
Agency-J. A. Cormack	
Anti-Corrosive Metal Products Co., Inc.	212
Agency-Woodard & Voss, Inc.	
Arizona Chemical Company	43
Agency-Hazard Advertising Company	
Armour and Company, Armour Chemical Division	39
Agency-Foots, Cons & Belding	
Askania Regulator Company	103
Agency-Saunders, Shroat & Associates, Inc.	
Atlantic Metal Hose Co., Inc.	83
Agency-The Weston Company	
Aurora Pump Company, Subsidiary of the New York Air Brake Company	239
Agency-Fred A. Himrichsen Advertising	
"Automatic" Sprinkler Corporation of America	162
Agency-The Robert A. Joyce Company	
B	
Babcock & Wilcox Co., The, Refractories Division	235
Agency-Michel-Catber, Inc.	
Babcock & Wilcox Company, The, Tubular Products Division	201
Agency-O. S. Tyson and Company, Inc.	
Baker-Raulang Company, The	59
Agency-G. M. Basford Co.	
Baldwin-Hill Company	174
Agency-Eldridge, Inc.	
Baltimore Company	172
Agency-The Eldridge Company	
Barco Manufacturing Co.	236
Agency-Armstrong Advertising	
Barksdale Valves	100
Agency-Herman Sebuck Advertising	
Barry & Co., Incorporated, B. J.	116
Agency-Jackson and Company	
Bartlett & Snow Co., The C. O.	167
Agency-Henry T. Bourne Advertising	
Barton Instrument Corporation	104
Agency-Steller, Millar & Lester, Inc.	
Beach-Russ Company	121
Agency-Spooner & Krieger	
Beaumont Birch Company	183
Agency-Hening & Company, Incorporated	
Beckman Instruments, Inc.	121
Agency-West-Marquis, Inc.	
Bellows Co., The	6
Agency-Ralph Gross Advertising, Inc.	
Benjamin Electric Mfg. Co.	170
Agency-Van Auker, Ragland & Stevens	
Bersworth Chemical Co.	44
Agency-Meissner & Calver, Inc.	
Biddle Co., James G.	98
Agency-The Roland G. E. Ullman Organization	
Bird Machine Company	9
Agency-Walter B. Snow and Sons, Inc.	
Bixby Zimmer Engineering Co.	180
Agency-Arbingast, Becht and Assoc., Inc.	
Black Products Company	113
Agency-Lausen & Solomon	
Blaw-Knox Company, Blaw-Knox Equipment Division, Process Equipment Department	141
Agency-Al Paul Lefton Company Inc.	
Blaw-Knox Company, Blaw-Knox Sprinkler Division	171
Agency-Al Paul Lefton Company	
Blaw-Knox Company, Bufo-vak Equipment Division	148
Bowser, Inc.	100
Agency-Willis S. Martin	
Bridgeport Brass Company	149
Agency-Hazard Advertising Company	
Bristol Company, The	90, 91
Agency-James Thomas Chisring Company	
Brookfield Engineering Laboratories, Inc.	120
Agency-F. P. Walther, Jr. and Assoc.	
Brown Company	42
Agency-J. M. Matthes, Incorporated	
Brown Fintube Co.	161
Agency-Henry T. Bourne Advertising	
Brush Electronics Company	105
Agency-The Griswold-Eshleman Co.	
Buell Engineering Co.	237
Agency-Hicks & Greist, Inc.	
B/W Controller Corporation	98
Agency-Rolls C. Spinning, Inc.	
C	
C-O-Two Fire Equipment Company	173
Agency-G. M. Basford Co.	
Cambridge Instrument Company, Inc.	120
Agency-E. M. Freystadt Associates, Inc.	
Cambridge Wire Cloth Co., The	206
Agency-Emercy Advertising Corporation	
Carbide and Carbon Chemicals Company, A Division of Union Carbide and Carbon Corporation	246
Agency-J. M. Matthes, Inc.	
Carbolite Company	152
Agency-Spooner & Krieger	
Carboloy Department of General Electric Company	26
Agency-Brooks, Smith, French & Dorrance, Inc.	
Carborundum Company, The, Refractories Division	157
Agency-G. M. Basford Co.	
Carpenter Steel Company, The, Alloy Tube Division	160
Agency-Beaumont, Heller & Sperling, Inc.	
Cash Company, A. W.	198
Celcote Company, The	170
Agency-The Carpenter Advertising Co.	



MAGNOLIA AIRCO

supplies the southwest!
Magnolia Airco gases and liquids... rare gas mixtures... xenon... krypton... and neon conform to specification. You can count on their purity and consistent uniformity—every shipment packaged to your requirement! Consult your nearest Magnolia Airco office for full details.



AIR REDUCTION MAGNOLIA CO.

A Division of Air Reduction Company, Incorporated
Beaumont • Corpus Christi • Dallas • El Paso
Fort Worth • Hobbs • Houston • Oklahoma City
San Antonio • Shreveport • Tulsa • Wichita Falls
Southwestern Headquarters for Oxygen, Acetylene and Other Gases... Carbide... Gas Welding and Cutting Machines, Apparatus and Supplies... Arc Welders, Electrodes and Accessories.

at the frontiers of progress
you'll find



When inquiring check CP 3888 on handy form, pgs. 2-3

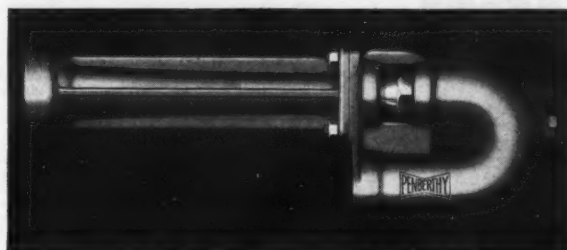
CHEMICAL PROCESSING

Central Scientific Company 118
 Agency-Mantell, Gebhardt & Reed, Inc.
 Chambers Brothers Company 144
 Agency-A. M. Beiler
 Chase Bag Company 109
 Agency-The Buchen Company
 Chemical Corporation, The 128
 Agency-Wm. B. Remington, Inc.
 Chicago Bridge & Iron Company 154
 Agency-Russell T. Gray, Inc.
 Chicago Pneumatic Tool Company 241
 Agency-G. M. Barford Co.
 Chicago Steel Service Company 134
 Agency-Fred H. Ebersold, Inc.
 Cincinnati Division of Bendix Aviation Corporation 95
 Agency-MacManus, John & Adams, Inc.
 Clark Equipment Company, Industrial Truck Division 60
 Agency-Mantell, Gebhardt & Reed, Inc.
 Cleaver-Brooks Company 181
 Agency-Klau-Van Pietersom-Dunlap, Inc.
 Cleveland Vibrator Company, The 55
 Agency-R. C. Wellman Associates, Inc.
 Coe Manufacturing Company, The 123
 Agency-T. H. Ball and Son
 Coe-Drive Gears, Division Michigan Tool Company 196
 Agency-Denham & Company
 Consolidated Engineering Corporation 101
 Agency-Hixson & Jorgensen, Inc.
 Consolidated Vacuum Corporation 77
 Agency-Charles L. Rumrill & Co., Inc.
 Continental Can Company 111
 Agency-Batten, Barton, Durstine & Osborn, Incorporated
 Cooper Alloy Foundry Co., The 239
 Agency-Mahool Advertising, Inc.
 Coppus Engineering Corporation 166
 Agency-James Thomas Chirurg Company
 Corning Glass Works 84, 85
 Agency-Charles L. Rumrill & Co., Inc.
 Crane Co. 231
 Agency-The Buchen Company
 Crane Packing Company 128
 Agency-Symonds, MacKenzie & Company, Inc.
 Croll-Reynolds Co., Inc. 188
 Agency-Sterling Advertising Agency, Inc.
 Cuno Engineering Corporation 79
 Agency-James Thomas Chirurg Company
 D
 Davenport Machine and Foundry 248
 Agency-Bawden Bros., Inc.
 Day Company, Incorporated, The J. H. 205
 Agency-Strauch & McKim
 Delac Corporation 122
 Agency-Richards & Webb, Inc.
 Delta Engineering Sales Co. 124
 Agency-Bryan & Bryan
 Dialite Division, Great Lakes Carbon Corporation 243
 Agency-Darwin H. Clark Co.
 Doré Co., John L. 10
 Agency-Wallace Davis & Company
 Dow Chemical Company, The 25
 Agency-MacManus, John & Adams, Inc.
 Dow Corning Corporation 36
 Agency-Don Wagnitz Advertising
 Downingtown Iron Works, Inc., Division of Pressed Steel Tank Company 244
 Agency-R. E. Lovekin Corp.
 Dresser Industries, Inc. (see Roots-Connorsville Blower Corporation) 190
 Agency-Fuller & Smith & Ross, Inc.
 Du Pont de Nemours & Co. (Inc.) E. I., Electrochemicals Dept. 47
 Agency-Batten, Barton, Durstine & Osborn, Incorporated
 Du Pont de Nemours & Co. (Inc.) E. I., Polychemicals Department 35, 48
 Agency-Batten, Barton, Durstine & Osborn, Incorporated
 Durametallic Corporation 240
 Agency-M. Dale Ogden

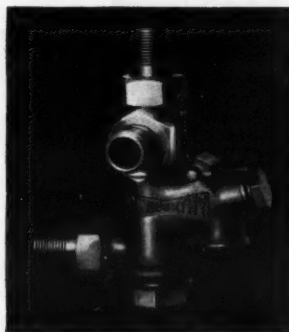
Duriron Company, Inc., The 3rd Cover
 Agency-Kircher, Helton & Collett, Inc.
 E
 Eastman Chemical Products, Inc. 49
 Agency-Kenyon & Eckhardt
 Eco Engineering Company 140
 Agency-The Michener Company
 Edward Valves, Inc., Subsidiary of Rockwell Manufacturing Company 232
 Agency-Mantell, Gebhardt & Reed, Inc.
 Eimco Corporation, The 125
 Agency-Mattie Company
 Eitel-McCullough, Inc. 214
 Agency-Conner-Jackson-Walker-McClure
 Eldorado Oil Works 44
 Agency-Sidney Garfield & Associates
 Elliott Company, Roto Division 194
 Agency-Joseph S. Vogel & Co.
 Elliott Company, Industrial Process Division 191
 Agency-Petersen & Kempner, Inc.
 Electric Auto-Lite Company, The, Instrument and Gauge Division 106
 Agency-J. C. Bull, Incorporated
 Electro Dynamic Division of General Dynamics Corporation 229
 Agency-Gotham Advertising Company
 Elsevier Press, The 248
 Agency-Wallace Davis & Company
 Erie Manufacturing Company 117
 Agency-John Mather Lupton Company, Inc.
 Ertel Engineering Corporation 127
 Agency-W. N. Hudson
 Exact Weight Scale Company, The 62
 Agency-J. W. Sieverling
 F
 Farris Engineering Corporation 137
 Agency-Lewis Advertising
 Federated Metals Division, American Smelting and Refining Company 152
 Agency-John Mather Lupton Company, Inc.
 Fenwal Incorporated 103
 Agency-James Thomas Chirurg Company
 Filter Paper Co., The 123
 Agency-Sander Rodkin Advertising Agency
 Filtration Engineers, Inc. 221
 Agency-W. L. Towne Advertising
 Filtration Fabrics Division, Filtration Engineers, Inc. 185
 Agency-W. L. Towne Advertising
 Filtrol Corporation, Chemical Division 204
 Agency-Heintz & Co., Inc.
 Flaherty Filter Fabrics 242
 Agency-Sherman Lawrence
 Flexible Tubing Corporation 253
 Agency-G. M. Barford Co.
 Flexitall Gasket Company 195
 Agency-William Jenkins Advertising
 Flexonics Corporation, Chicago Metal Hose Division 193
 Agency-Russell T. Gray, Inc.
 Flexrock Company 254
 Agency-Walter S. Chittick Company
 Foster Engineering Company 206
 Agency-Sanger-Funnell, Incorporated
 Foster Wheeler Corporation 189
 Agency-Rickard & Company, Inc.
 Foxboro Company, The 89
 Agency-Horton-Noyes Company
 Frantz Co., Inc., S. G. 236
 Agency-Eldridge, Inc.
 Friez Instrument Division of Bendix Aviation Corporation 106
 Agency-MacManus, John & Adams, Inc.
 Fuller Company 57
 Agency-O. S. Tyson and Company, Inc.
 Fuller Brush Co., The, Industrial Division 124
 Agency-John B. Fairbairn
 G
 Galigher Co., The 220
 Agency-Adamson, Buchman & Associates

There's Certain satisfaction in PRODUCTS BY

PENBERTHY



JET PUMPS—Penberthy can help you put the simple, economical principles of the jet pump to work wherever it's necessary to transfer or mix any liquid which will flow through a pipe. We make a complete line and have years of engineering experience upon which you can depend.

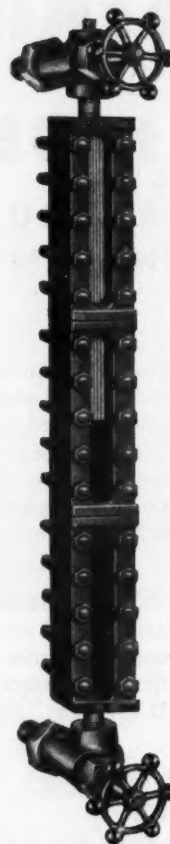


AUTOMATIC INJECTORS

Penberthy injectors are the accepted method of assuring a dependable supply of feed water, at lowest cost, to oil field and other firebox and portable boilers. They are being used increasingly for standby service on many large boilers. Easily installed, they require little or no attention.

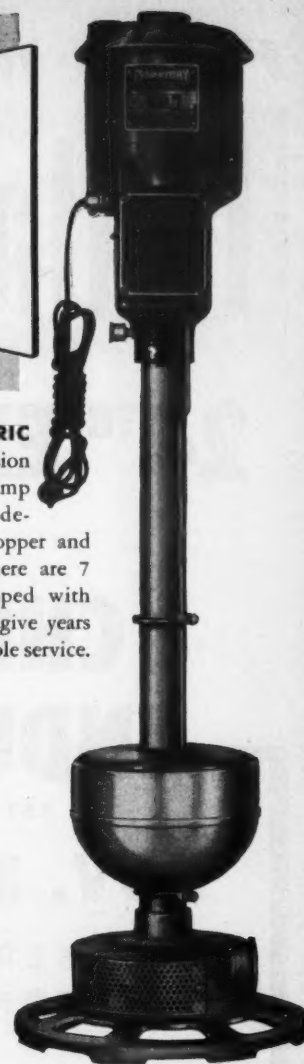
AUTOMATIC CELLAR DRAINERS • WATER HEATERS EJECTORS • HYDRAULIC EJECTORS • EDUCTORS EXHAUSTERS • CYCLING JET PUMPS • SYPHONS

...are among the other Products by Penberthy which can serve you in your operation. Why not write for literature detailing specifications and advantages. Ask, too, about the engineering service which Penberthy is providing for many prominent concerns in your industry.



LIQUID LEVEL GAGES—Penberthy makes a complete line of gages and valves for every type of application. 70 years of engineering experience is on hand to accommodate your particular requirements. You can always be assured of complete cooperation and reliable product service for any pressure...in any length.

Established 1886
PENBERTHY
INJECTOR COMPANY
 Division of the Buffalo-Eclipse Corporation
 1252 Holden Avenue, Detroit 2, Michigan



Manufacturers of Quality Products Since 1886

When inquiring check CP 3889 on handy form, pgs. 2-3

For the first time in

Philadelphia

24TH EXPOSITION of CHEMICAL INDUSTRIES

ESTABLISHED 1915

NOV. 30 to DEC. 5
COMMERCIAL MUSEUM
AND CONVENTION HALL

See almost 500 exhibits conveniently located on one floor, representing all phases of the chemical industries. Chemical engineers, chemists and skilled technical men will be on hand to offer the latest information and practical solutions to your processing production problems. See and compare, methods, materials, equipment, processes and techniques that will affect future trends in the chemical processing industries.

Acquire in a matter of days factual information it would take you months to accumulate. For 38 years this great exposition has exerted a vital progressive influence in the increasingly important field of chemical processing. **PLAN NOW TO ATTEND.**

Application forms for hotel accommodations are available by writing to

INTERNATIONAL EXPOSITION COMPANY • 480 LEXINGTON AVENUE, NEW YORK 17, N. Y.

When inquiring check CP 3890 on handy form, pgs. 2-3

Gallagher Company, The	197	James-Pond-Clark	238
Agency-Holland, Holland & Goodall		Agency-Anderson-McConnell	
Gates Rubber Company, The	18	Jefferson Chemical Company, Inc.	3, 41
Agency-Cloyd F. Woolley, Inc.		Agency-Hazard Advertising Company	
Gaylord Container Corporation	108	Jeffrey Manufacturing Co., The	61
Agency-Oakleigh R. French & Associates		Agency-Byer & Bowman Advertising Agency	
General American Transportation Corporation, Louisville		Jerguson Gage & Valve Company	177
Drying Machinery Unit	15	Agency-Roy Elliott Company	159
Agency-Weiss & Geller, Inc.		John-Manville	
General American Transportation Corporation, Process Equipment Division	87	Agency-J. Walter Thompson Company	240
Agency-Weiss & Geller, Inc.		Johnson Corporation, The	
General Electric Co.	187	Agency-Kreicker & Melan, Inc.	
Agency-G. M. Basford Co.		Johnston & Jennings Co., The Division of Pettibone	246
Giannini & Co., Inc., G. M.	234	Mulliken Corp.	
Agency-Western Advertising Agency, Inc.		Agency-Henry T. Bourne Advertising	
Gifford-Wood Co.	53		
Agency-O. S. Tyson and Company, Inc.		K	
Globe Company, The, Grip-Strut Division	172	Kemp Mfg. Co., The C. M.	74
Agency-Ross Llewellyn Inc.		Agency-Variant Dugdale and Company, Inc.	
Glycerine Producers' Association	35	Kinney Manufacturing Company	213
Agency-G. M. Basford Company		Agency-Hammond-Goff Co.	
Glyco Products Co., Inc.	42	Knight, Maurice A.	230
Agency-Sterling Advertising Agency, Inc.		Agency-Brown Advertising	
Gordon Co., Claud S.	132	Korfund Co., Inc., The	113
Agency-Merrill, McEnroe & Associates		Agency-Sanger-Punnell, Incorporated	
Goslin-Birmingham Manufacturing Co., Inc.	116		
Agency-Sparrow Advertising Agency		I	
Gray Company, Inc.	209	Labelon Tape Co., Inc.	112
Agency-Alfred Colle Company		Agency-Hanford & Greenfield, Inc.	
Grinnell Company, Inc.	169	La Favorite Rubber Mfg. Co.	238
Agency-Horion-Noyes Company		Agency-Merceready, Handy & Van Denburgh	
Groen Mfg. Co.	222	Lapp Insulators Co., Inc.	
Agency-Moore Associates		Process Equipment Division	155
		Agency-Ed Wolff & Associates	
H		Lee Metal Products Co., Inc.	216
Hamilton Institute, Alexander	73	Agency-Walker & Downing	
Agency-Donabus & Coe, Inc.		Leifax	227
Hapman Conveyors, Inc., Division Hapman-Dutton Company		Agency-H. Lesteraux Advertising	
Agency-Paxton Advertising Incorporated	52	Leslie Co.	215
Hardinge Company, Incorporated	130	Agency-Merceready, Handy & Van Denburgh	
Agency-The W. H. Long Co.		Lewis-Shepard	55
Harper Company, The H. M.	229	Agency-Horton-Noyes Company	
Agency-The E. E. Ben Company		Librascope Incorporated	123
Harrington & King Perforating Co., The	212	Agency-Western Advertising Agency, Inc.	
Agency-Merchandising Advertisers, Inc.		Lift Trucks Incorporated	52
Harrisburg Steel Corporation	112	Agency-The Bobnett Company	
Agency-The W. H. Long Co.		Lindberg Engineering Company	119
Hauck Manufacturing Co.	214	Agency-Saunders, Shrout & Associates, Inc.	
Agency-Spooner & Krieger		Link-Belt Company	19, 56, 65, 223
Haveg Corporation	177	Agency-Klan-Van Pietersom-Dunlap, Inc.	
Agency-Geare-Marston		Liquidometer Corp., The	102
Hays Corporation, The	98	Agency-Lucerna Company Inc.	
Agency-Proebsting, Taylor Inc.		Lovejoy Flexible Coupling Company	117
Heil Process Equipment Corporation	224	Agency-Symonds, MacKenzie & Company, Inc.	
Agency-The Lee Donnelly Co.			
Heyden Chemical Corporation	45	M	
Agency-Sommers-Davis, Inc.		Manning, Maxwell & Moore, Inc.	107
Heyl & Patterson, Inc.	139	Agency-Fuller & Smith & Ross Inc.	
Agency-Dan A. Sullivan		Marathon Corporation, Chemical Division	36
Hills-McCanna Co.	192	Agency-J. A. Cormack	
Agency-Russell T. Gray, Inc.		Marietta Concrete Corp., The	209
Hoke Incorporated	232	Agency-Harry M. Miller, Inc.	
Agency-Lewis Advertising		Martin Engineering Company	66
Hooker Electrochemical Company	24	Agency-Kenneth B. Butler & Associates	
Agency-Charles L. Rumrill & Co., Inc.		Mason-Neilan Regulator Co.	96, 97
Hough Co., The Frank G.	51	Agency-Sutherland-Abbott	
Agency-Ervin R. Abramson		Melooz, Inc.	114
Hyster Company	63	Merco Centrifugal Co.	170
Agency-Foote, Cone & Belding		Agency-Walther-Boland Associates	
		Mercoid Corporation, The	102
I		Metalab Equipment Corp.	126
Illinois Testing Laboratories, Inc.	121	Agency-R. J. Gold Company	
Agency-The Buchen Company		Metal Glass Products Company	197
Insul-Mastic Corporation of America	175	Agency-The Jaqua Company	
Agency-Dan A. Sullivan		Metalsmiths Division of Orange Roller Bearing Co., Inc.	242
International Exposition Company	252	Agency-Thoma & Gill	
Agency-O. S. Tyson and Company, Inc.		Michigan Pipe Company	154
International Nickel Company, Inc., The	165	Agency-Foehl & Beck	
Agency-Marschalk & Pratt Co., Inc.		Michigan Wheel Co.	140
I-T-E Circuit Breaker Co., Rectifier Division	20, 21	Midland Industrial Finishes Co.	168
Agency-The Richard A. Foley Advertising Agency, Incorporated		Agency-Western Advertising Agency, Inc.	
		Milton Roy Company	219
J		Agency-Harris D. McKinney Incorporated	
Jackson & Church Co.	210		
Agency-Foehl & Beck			



**Have you
changed
your
address
recently?**

● If so, you'll want to insure that your copy of **CHEMICAL PROCESSING** reaches you without interruption. Just send us your new address . . . use the handy form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

**mail this request to
READER SERVICE DEPT.
CHEMICAL PROCESSING**

**111 East Delaware Place
Chicago 11, Illinois**

Former Company Affiliation

Former Address

Your Name Present Title

Present Company

Main Product

Rating of Company

Street Address

City Zone No. State



CHEMICAL PROCESSING

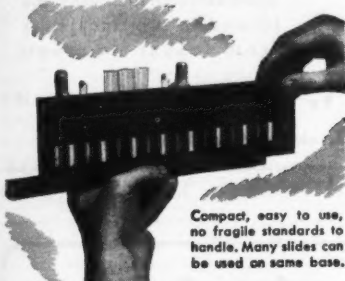
You can't beat TAYLOR COMPARATORS for ACCURACY

Liquid color standards are unconditionally guaranteed against fading.

for SPEED

Simple 3 step method requires less than one minute to make reading

for PHOSPHATE, pH, CHLORINE DETERMINATIONS



Compact, easy to use, no fragile standards to handle. Many slides can be used on same base.

SEE YOUR DEALER...OR WRITE DIRECT FOR COMPLETE INFORMATION ABOUT THESE WIDELY USED COMPARATORS



GET THIS FREE "TELL-ALL" BOOK

Tells value of pH, chlorine and other controls in 34 different fields of industry.

Use it as a reference book! Contains 96 pages of valuable information—illustrates and describes Taylor Equipment.

W. A. TAYLOR AND CO.
YORK & RODGERS FORGE RD. • BALTIMORE, MD

When inquiring check CP 3891 on handy form, pgs. 2-3

Mine & Smelter Supply Co., The	197	Pressed Steel Tank Company	115
Agency-Sbau-Schump Adver- tising Agency, Inc.		Agency-The Buchen Company	
Mixing Equipment Co., Inc.	4th Cover	Pritchard & Co., J. F.	138, 192
Agency-Charles L. Ramrill & Co., Inc.		Agency-Carter Advertising Agency, Inc.	
Monsanto Chemical Company		Proctor & Schwartz, Inc.	147
Agency-Gardner Advertising Co.	30, 31	Agency-Robert S. Kampmann Jr.	
Moore & Company, Samuel, Dekoron Tubing Division	217	Propellair, Division of Rob- bins & Myers, Inc.	226
Agency-Palm & Patterson Inc.		Agency-Greenhaw & Rush, Inc.	
Morse Manufacturing Co., Inc.	64	Proportioners, Inc., 2nd Cover	
Agency-Chapman-Nowak & Associates		Agency-Hammond-Goff Co.	
Mortell Co., J. W.	227	Pulverizing Machinery Com- pany	7
Agency-Arthur C. Barnett		Agency-Mercerdy, Handy & Van Denburgh	
Moto-Truc Co., The	67	Pure Carbonic Company, A Division of Air Reduction Company Incorporated	32
Agency-Ritchie & Sattler Inc.		Agency-Fuller & Smith & Ross Inc.	
Murray Manufacturing Co., D. J.	186	Putnam Publishing Company	127, 234, 244, 252
Agency-R. C. Breth Inc.		R	
Nagle Pumps, Inc.	242	R-S Products Corporation	218
Agency-Tri-State Advertising Co., Inc.		Agency-Carl Mason Craig Company	
National Adhesives	27	Raybestos-Manhattan, Inc., Packing Division	234
Agency-G. M. Barford Com- pany		Agency-Gray & Rogers	
National Airoil Burner Co., Inc.	242	Read Standard Corporation, Bakery-Chemical Division	144
Agency-R. E. Lovekin Corp.		Agency-The W. H. Long Co.	
National Carbon Company, A Division of Union Carbide and Carbon Corporation	143	Republic Rubber Division, Lee Rubber & Tire Corporation	114
Agency-William Ely Company		Agency-Meek and Thomas, Inc.	
National Engineering Co., Simpson Mix-Muller Divi- sion	71	Republic Steel Corporation, Steel and Tubes Division	134, 188
Agency-Russell T. Gray, Inc.		Agency-Meldrum & Fewsmith, Inc.	
National Filter Media Corp.		Revere Copper and Brass In- corporated	72
The		Agency-St. Georges & Keyes, Inc.	
Agency-Sanger-Funnell In- corporated		Rietz Manufacturing Co.	238
Neff & Fry Co., The	210	Agency-Alport & O'Rourke	
Agency-The Parker Advertis- ing Company		Ringwood Chemical Corpora- tion	37
Niagara Alkali Company	29	Agency-Sterling Advertising Agency, Inc.	
Agency-Hazard Advertising Company		Robinson Air-Activated Con- veyor Systems, A Division of Morse Boulger Destruc- tor Co.	56
Niagara Filters Division, Amer- ican Machine and Metals, Inc.	13	Agency-Sanger-Funnell, Inc.	
Agency-Charles L. Ramrill & Co., Inc.		Rochester Manufacturing Co., Inc.	100
Nicholson & Co., W. H.	254	Agency-Charles L. Ramrill & Co., Inc.	
Agency-Wilbur A. Myers		Rockwell Company, W. S.	78, 240
Norton Company	70	Agency-Spooner & Kriegel	
Agency-James Thomas Chiruz Company		Rockwell Manufacturing Co. 230	
O		Agency-Marsteller, Gebhardt & Reid, Inc.	
Oberdorfer Foundries, Inc.	58	Roots Connorsville Blower Cor- poration, A Division of Dresser Industries, Inc.	190
Industrial Pump Div.		Agency-Fuller & Smith & Ross Inc.	
Agency-Richards & Webb, Inc.		S	
Oliver United Filters, Inc.	184, 185	Schmieg Industries, Inc.	246
Agency-Sanger-Funnell, Inc.		Agency-Alfred B. Caldwell Inc.	
Omega Machine Company	93	Safeway Industrial Equipment Corp.	166
Agency-Hammond-Goff Co.		Agency-Vernon S. Weiler Advertising	
Oronite Chemical Company	28	Schutte and Koerting Co.	135
Agency-L. C. Cole Company		Agency-Harris D. McKinney, Inc.	
Orr & Sembower, Inc.	200	Scott Aviation Corp., Safety Equipment Division	166
Agency-Beaumont, Heller & Sperling, Incorporated		Agency-Melvin F. Hall Ad- vertising Agency, Inc.	60
P		Screw Conveyor Corporation	144
Palmer-Shile Co.	66	Sethco	
Agency-Alfred B. Caldwell, Inc.		Agency-Harry Hurst Advertis- ing	
Palmer Thermometers, Inc.	104	Sharples Corporation, The	186
Agency-The Bobnett Company		Agency-Renner Advertisers	
Panellit, Inc.	12	Shell Development Company	142
Agency-Thomas R. Sundheim		Agency-J. Walter Thompson Co.	
Patterson-Kelley Co., Inc., The	233	Shriver & Co., Inc., T. - 78, 244	
Agency-O. S. Tyson and Company, Inc.		Agency-Spooner & Kriegel	180
Penberthy Injector Company	251	Agency-Thoma & Gill	
Agency-Comstock & Company		Simpson Mix-Muller Division, National Engineering Co.	71
Perfecting Service Company	172	Agency-Russell T. Gray, Inc.	
Agency-E. J. Preiser & Co.		Sintering Machinery Corp.	106
Perkin-Elmer Corp., The	92	Agency-Spooner & Kriegel	
Agency-Fred Witter Adver- tising		Sirrine Co., J. E.	204
Pfaudler Co., The	145	Agency-The Roland G. E. Ullman Organization	
Agency-Charles L. Ramrill & Co., Inc.		Sly Mfg. Company, The W.	110
Photoswitch, Inc.	229	Agency-The Bayless-Kerr Company	
Agency-Horton-Noyes Company		Southwestern Engineering Com- pany, Separator Division	68
Pittsburgh Coke & Chemical Co.	23	Agency-The McCarty Company	
Agency-Walker & Downing			
Plastic Packaging Company	113		
Agency-Symonds, MacKenzie & Company, Inc.			
Platecoil Division of Tranter Mfg. Inc.	254		
Agency-The Jaqua Company			
Pneumatic Scale Corp., Ltd.	110		
Agency-H. B. Humphrey, Alley & Richards, Inc.			
Potts Co., Horace T.	254		
Agency-Beaumont, Heller & Sperling, Incorporated			
Powers Regulator Co., The	88		
Agency-Symonds, MacKenzie & Company, Inc.			

FOR FUME AND DUST REMOVAL

SPIRATUBE® gets closer-in!

For blowing, exhausting, and light materials handling, Spiratube is proving itself superior to costlier types of ducting... because it bends at any point, takes tight turns up to 180°, and needs no special fittings for snaking around obstructions.

Made of galvanized steel wire helix which is secured in place between overlapping plies of various specially coated fabrics, this new, light-weight, flexible ducting connects quickly and easily to permanent or portable lines.

Standard sizes for all requirements are immediately available from well-stocked distributors—coast-to-coast.

SPIRATUBE is used by Todd Ship-
yards Corporation for removing
welding fumes during ship
construction and repair at
its two plants in New
York Harbor.



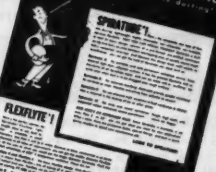
**Flexible
Tubing**
CORPORATION

Guilford, Connecticut

Pasadena 1, California

When inquiring check CP 3892 on handy form, pgs. 2-3

FLEXIBLE'S LINE OF TUBING



WRITE TODAY for de-
tails on Flexible's full line of
amazing cost-saving ducting.

YOU SAVE STEEL MANHOURS MONEY



BY USING PLATECOIL FOR TANK HEATING AND COOLING

YOU SAVE CRITICAL STEEL because "Platecoils" require less than 1/2 the steel used in pipe coils of the same surface area. A 22" x 119" Platecoil weighs 95 lbs. against 239 lbs. for an equivalent 2" pipe coil. 144 lbs. steel saved. YOU SAVE CRITICAL MANHOURS because "Platecoils" are easily installed, cleaned or replaced in minutes. . . . No down-time. . . . No tank dumping. Many manhours saved. YOU SAVE MONEY because "Platecoils" cost up to 50% less in initial cost and require less maintenance. Investigate "Platecoils" today.

Send for complete
technical manual and
descriptive Bulletin No. P54



When inquiring check CP 3893 on handy form, pgs. 2-3

INSTANT SETTING



CONCRETE FLOOR PATCH

TEST IT ON
TRIAL OFFER

TOUGH AS NAILS! FAST!

Repair broken factory floors without the usual traffic tie-up. Simply shovel INSTANT-USE into hole or rut — tamp smooth — truck over! No waiting! INSTANT-USE bonds tight to old concrete — right up to a feather edge. It's tough. Wears like iron. Won't crack or crumble. Install complete overlay where floors are badly chewed up. Used indoors or out. Immediate shipment.

MAIL COUPON for TRIAL OFFER and FREE HANDBOOK

INSTANT-USE

FLEXROCK COMPANY (Offices in principal cities)
3611 Filbert St., Philadelphia 4, Pa.

Please send me complete INSTANT-USE information, details of TRIAL ORDER PLAN and HAND BOOK OF BUILDING MAINTENANCE—no obligation. (Clip and attach Coupon to Co. letterhead).

Name _____
Title _____
Company _____
Address _____



When inquiring check CP 3894 on handy form, pgs. 2-3

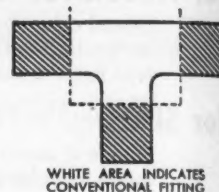
254

Sparkler Manufacturing Co., 227 Agency-Kraicher & Melan, Inc.	Twin Disc Clutch Company 114 Agency-Spencer Curtis, Inc.
Special Screw Products Co., 184 The Agency-C. D. Heiler	U
Space Engineering Company, 94 Inc. Agency-Michel-Catber, Inc.	Union Carbide and Carbon Corporation, Carbide and Carbon Chemicals Company 246 Agency-J. M. Matbes, Incorporated
Spencer Turbine Company, 116 The Agency-W. L. Towne Advertising	Union Carbide and Carbon Corporation, National Carbon Company 143 Agency-William Esty Company, Incorporated
Sperry & Co., D. R. 140 Agency-Simmonds & Simmonds, Incorporated	United Chromium, Inc. 48 Agency-Richard & Company, Inc.
Spo Incorporated 112 Agency-Penn and Hamaker, Inc.	U. S. Industrial Chemicals Co., Opp. 26 Agency-G. M. Basford Co.
Sprague Engineering and Sales Corp. 122 Agency-O. K. Fagan Advertising Agency	U. S. Stoneware 158 Agency-Ralph Gross Advertising, Inc.
Spray Engineering Co., 238 Agency-Larcom Randall Advertising	United States Gasket Company, Fluorocarbon Products Div. 164 Agency-The Michener Company
Sprout-Waldron & Co., Inc. 76 Agency-Stephen Goerl Associates Incorporated	United States Spring & Bumper Co. 66 Agency-Alice Walsh Company
Standard Welded Products, Inc. 190 Agency-Ray McCarthy Advertising Service, Inc.	Universal Road Machinery Co. 240
Standard Oil Company 208 Agency-McCann-Erickson, Inc.	V
Standard Steel Corporation 120 Agency-The McCarty Company	Vacu-Blast Co., Inc. 60 Agency-Walther-Boland Associates
Steel and Tubes Division, Republic Steel Corporation 134, 188 Agency-Meldrum & Feunsmith, Inc.	Vanton Pump Corp. 126 Agency-Powrad Co.
Stepan Chemical Co., The 48 Agency-Frank C. Naher, Inc.	Viking Pump Company 134 Agency-Walter E. Battenfeld Co.
Stephens-Adamson Mfg. Co., Standard Products Div. 223 Agency-Glenn, Jordan, Stoetzel, Inc.	W
Strahman Valves, Inc. 212 Agency-Picard, Marvin & Redfield	Waldorf Sales Co. 210 Agency-Moss Associates
Sun Oil Company, Industrial Products Department 122 Agency-Gray & Rogers	Walker Process Equipment Inc. 250 Agency-Hollingsworth and Collins
T	Wallace & Tiernan Company Inc. 105 Agency-Branslater Associates, Inc.
Taber Pump Co. 183, 248 Agency-Tyler Kay Company, Inc.	Watson-Stillman Fittings Division, H. K. Porter Company Inc. 211 Agency-McNevin-Wilson-Dalldorf, Inc.
TAGIabue Instruments Division, Weston Electrical Instrument Corporation 102 Agency-G. M. Basford Company	Waukesha Foundry Company 75 Agency-Morrison-Greene-Seymour Incorporated
Taller & Cooper, Inc. 164 Agency-Harold Marshall Advertising Company	Wedge Wire Corporation 236 Agency-Herb W. Buerger
Tapecoat Company, The 152 Agency-Fred H. Eberold, Inc.	Weiman Pump Mfg. Co., The 136 Agency-Harry M. Miller, Inc.
Taylor and Co., W. A. 253 Agency-Emery Advertising Corporation	Welding Fittings Corp. 3 Agency-W. S. Hill Company
Taylor Forge & Pipe Works 82 Agency-Kraicher & Melan, Inc.	West Bend Equipment Corp. 117 Agency-Morrison-Greene-Seymour Incorporated
Taylor Instrument Companies 106 Agency-Batten, Barton, Durstine & Osborn, Incorporated	Western Precipitation Corporation 245 Agency-Dosier-Eastman & Company
Tennessee Corporation 34 Agency-Crawford & Porter, Inc.	Westinghouse Electric Corporation 80, 81, 247 Agency-Fuller & Smith & Ross Inc.
Thayer Scale and Engineering Corporation 112 Agency-F. P. Walther Jr. & Associates	Weston Electrical Instrument Corp. 102 Agency-G. M. Basford Company
Thermo Electric Co., Inc. 99 Agency-Fred Lange Associates, Inc.	Wheeler Insulated Wire Co., Inc. 209 Agency-Edward W. Robotham & Company
Thomas Truck & Caster Co. 64 Agency-The Biddle Company	Wilbur & Williams Company, The 196 Agency-Harry M. Frost Company, Inc.
Tilden Tool Manufacturing Company 204 Agency-The Martin R. Klitten Company, Inc.	Worthington Corporation, Steam Turbine Division 69 Agency-James Thomas Chirurg Company
Tieflex Inc. 86 Agency-John Falkner Arndt & Co., Inc.	Wyandotte Chemicals Corporation 46 Agency-Brooke, Smith, French & Dorrance, Inc.
Tokheim Oil Tank and Pump Company, General Products Division 127 Agency-Jones & Taylor and Associates	Y
Towmotor Corporation 64 Agency-Howard Swink Advertising Agency, Inc.	Yale & Towne Manufacturing Company, The 146 Agency-Kutbrauff & Ryan, Inc.
Trane Company, The 249 Agency-Campbell-Mishun, Inc.	Yarnall-Waring Company 182 Agency-The Michener Co.
Treadwell Construction Co. 199 Trent Inc. 239	York Co., Inc., Otto H. 78 Agency-Merceready, Handy & Van Denburgh
Tri-Clover Machine Co. 156 Agency-Russell T. Gray, Inc.	Youngstown Welding & Engineering Co., The 14 Agency-Flad-Erwin Advertising
Tropical Paint & Oil Co., The 194 Agency-The Fred M. Randall Co.	Z
	Zurn Mfg. Co., J. A. 16, 17 Agency-The Lee Donnelly Co.

How the *Speedline* "TANGENTIAL FEATURE" cuts stainless piping costs

Now you can save up to 50% on corrosion-resistant lines by using light wall stainless pipe and versatile Speedline Fittings.

The added straight section of corrosion-resistant Speedline Fittings permits attaching unions or flanges without fouling...



WHITE AREA INDICATES CONVENTIONAL FITTING

reduces number of welds required... simplifies installation... eliminates angle joints.

SEND FOR LATEST INFORMATION

Write a note on your company letterhead to get the complete story on the many cost-saving advantages of the Speedline System for process piping.

Speedline distributors are located in principal cities from coast to coast

HORACE T. POTTS CO. Since 1815

502 E. Erie Avenue, Philadelphia 34, Pa.

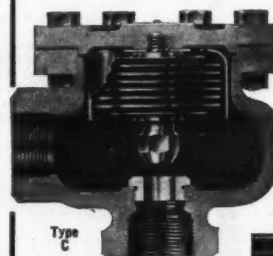
When inquiring check CP 3895 on handy form, pgs. 2-3

Nicholson Steam Traps

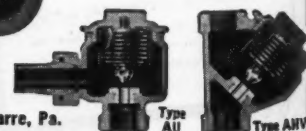
STOP AIR BINDING, Raise temperature 35°

Equipment temperatures were up 30° to 40° higher after Nicholson's replaced mechanical traps in his plant, according to Chief Engineer H. F. D. He also reports faster warm-up, stating that all air-binding was relieved. And "saving in steam waste cut our fuel cost at least 10%". 5 types for process, heat, power. Sizes, 1/4" to 2"; press. to 250 lbs. To see why leading plants are increasingly standardizing on Nicholson traps send for

BULLETIN 853



181 Oregon St., Wilkes-Barre, Pa.



W. H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

When inquiring check CP 3896 on handy form, pgs. 2-3

CHEMICAL PROCESSING

"That's Interesting"

Advertising enters the bathtub

A British patent has been granted for a specially-designed cutting blade for use in inserting publicity or other printed matter into transparent cakes of soap.

This convention should be quiet

"Outdoor Noise" will be the subject for the Fourth National Noise Abatement Symposium to be held in Chicago October 24 and 25.

New word — old problem

Silvichemistry is the term coined by Dr. A. N. Parrett, Rayonier, Inc., to describe that branch of chemistry specializing in the study of the organic chemicals, other than cellulose, stemming from wood. Although cellulose has been used to make rayon, acetate, cellophane, and other useful products, the silvichemicals (functioning in wood as a binding agent for cellulose) have virtually gone to waste. Even the word "silvichemistry" may have to wait for recognition — after 20 years "petrochemistry" or "petrochemicals" are still not listed in the standard dictionaries.

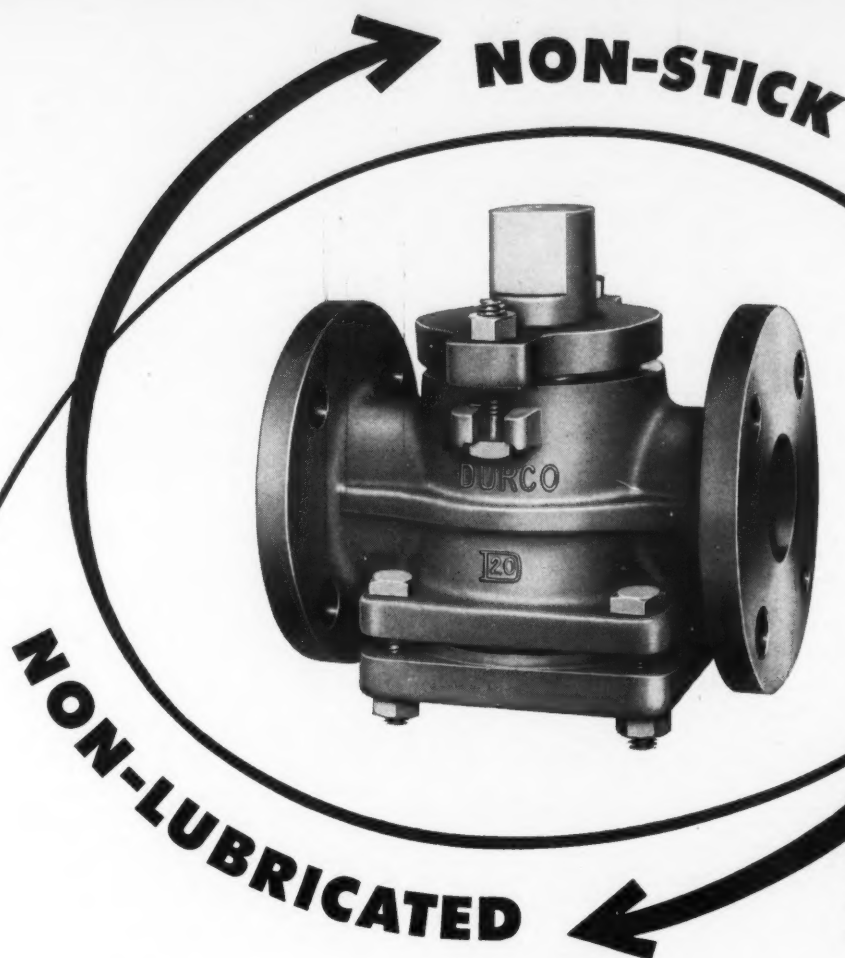
Aerosol camera

The Stanford Research Institute has announced the development of an aerosol camera capable of photographing the airborne particles while they are floating free in the atmosphere. Useful on solid or liquid particles as small as one two thousandths of an inch, the camera supplants previous microscopic techniques which required collection of the particles on slides.

"Big Mill" helps reduce fabrication costs

A rolling mill capable of producing 195-inch steel plate is being used by Lukens Steel Co., Coatesville, Pa. The 206-inch mill is designed to reduce fabrication costs by enabling fabricators to make industrial equipment with fewer welding, fitting, and shaping operations.

For more information on product at right, specify CP 3897 . . . see information request blank between pages 2-3.



Available in Durimet 20, Durco 18-8-S-Mo and a wide range of other Durco stainless alloys.

DURCO TYPE F VALVE

When you buy a valve, you're mainly interested in trouble-free performance. This valve gives it to you—in the toughest kinds of chemical service. There are thousands in use. Yet, no case of sticking has ever been reported, despite the fact that no lubricant is used.

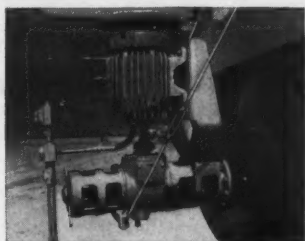
The reason is the Teflon sleeve—and the basic design that makes it practical to use. Sizes 1/4" through 2". Other details in Bulletin V/4.



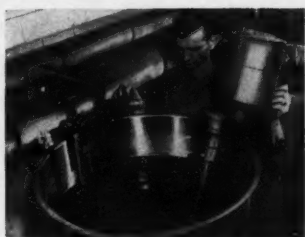
**A product of
THE DURIRON COMPANY, Inc.
Dayton, Ohio**



LIGHTNIN SERIES E MIXERS, turbine and paddle types, are supplied for open or closed tanks, in sizes from 1 to 500 HP.



LIGHTNIN SERIES SE MIXERS, for tanks up to 5 million gallons, offer new easy repacking. Modifications for every need. Sizes 1 to 25 HP.



LIGHTNIN PORTABLE MIXERS are used everywhere to do hundreds of mixing jobs. Thirty models to choose from. Sizes 1/4 to 3 HP.

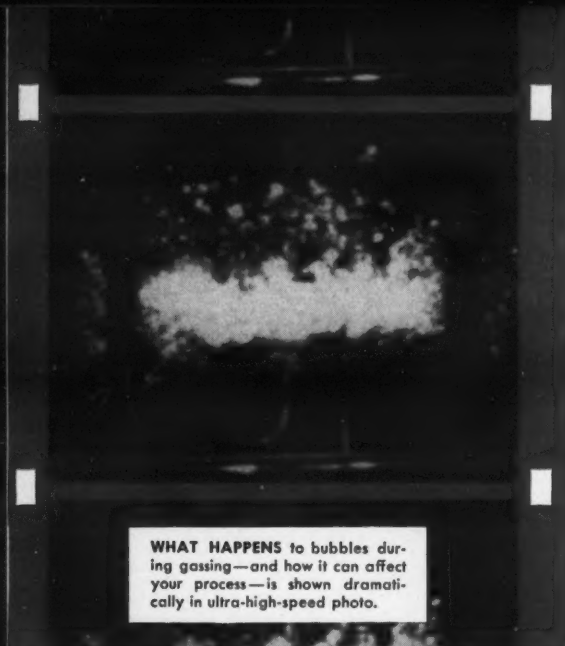
Lightnin®
Mixers



Get these helpful LIGHTNIN Catalogs

This library of mixing information is yours for the asking. Catalogs contain helpful data on impeller selection; sizing; best type of vessel; valuable installation and operating hints; complete description of LIGHTNIN Mixers.

MIXCO fluid mixing specialists



WHAT HAPPENS to bubbles during gassing—and how it can affect your process—is shown dramatically in ultra-high-speed photo.

How to make a gas bubble work twice as hard for you

Notice the stream of gas bubbles sweeping off the mixer turbine blade in the picture.

Now see how the gas at the right is breaking into tiny pin-point bubbles, with tremendous contact area.

Notice how the bubbles break up *after* they leave the turbine blade?

The turbine doesn't split up the bubbles, as is commonly supposed. But it *does* cause turbulence. And turbulence goes to work on the bubbles.

The turbine sets up a fluid *flow* in the vessel, too. Flow is what sweeps the gas through and through the mix, keeping gas in contact *longer*.

WHAT FLUID MIXING DOES

The right combination of turbulence and flow can do wonders for your

process. It can *double* the efficiency of gas dispersion.

It can help you get uniform suspensions quickly; cut dissolving time in two; give you tight control of a critical thermal reaction.

Many processors are putting these forces to work, scientifically—with outstanding results. You can, too. But you can't do it with just any mixer. Guesswork won't do it. You have to *be sure* about results.

You *can* be sure, when you specify a LIGHTNIN Mixer. Every LIGHTNIN is guaranteed to do what you want it to do.

Pick out your toughest fluid mixing operation, the one you'd like most to improve. Turn us loose on it. Get started *now* toward the results you want. Write us today.

MIXING EQUIPMENT Co., Inc.

185 Mt. Read Blvd., Rochester 11, N. Y.

In Canada: William & J. G. Greey, Ltd., Toronto 1, Ont.

- ☐ DH-50 Laboratory Mixers
- ☐ B-75 Portable Mixers (electric and air driven)
- ☐ B-102 Top Entering Mixers (turbine and paddle types)
- ☐ B-103 Top Entering Mixers (propeller type)
- ☐ B-104 Side Entering Mixers
- ☐ B-105 Condensed Catalog (complete line)
- ☐ B-107 Mixing Data Sheet

Please send me the catalogs checked at left.

Name _____ Title _____

Company _____

Address _____

City _____ State _____

CHEMICAL PROCESSING

This is a

PUTMAN-STYLE® Magazine

... terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION

Other magazines use the PUTMAN format...

... but unless a publication has ALL the features above, it isn't a

PUTMAN-STYLE Magazine

*Created by Putman Publishing Co.

For more information on product at left, specify CP 3890 ... see information request blank between pages 2-3.